INSECTS OF MICRONESIA
Coleoptera: Scarabaeidae

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INTRODUCTION

The Scarabaeidae, one of the larger and better known families of beetles has world-wide distribution. The group has penetrated in surprising numbers even the remote islands of the Pacific Ocean. How this has been accomplished can only be surmised but undoubtedly many have managed to accompany man in his travels, with his food and domestic animals, accidentally hidden in whatever he carried with him or in his means of conveyance. Commerce later greatly increased such possible means. Others may have been carried by ocean currents or winds in floating debris of various kinds.

Although comparatively few life cycles have been completely studied, their very diverse habits increase the chances of survival of at least some members of the group. The food habits of the adults range from the leaf feeding Melolonthinae to the coprophagous Scarabaeinae and scavenging Troginae. Most of the larvae or grubs find their food in the soil. Many species have become important as economic pests, the coconut rhinoceros beetle, *Oryctes rhinoceros* (Linn.) being a Micronesian example.

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The material upon which this report is based was assembled in the United States National Museum of Natural History from existing collections and survey collected specimens. Most of the specimens came through the

Bernice P. Bishop Museum, the Field Museum of Natural History and the United States National Museum of Natural History.

We are grateful to R. D. Pope, British Museum of Natural History, F. Hieke and J. Schulze of the Humboldt University Museum, Berlin, and Mme Bons and A. Villiers of the Museum National d'Histoire Naturelle, Paris, either for comparing specimens with types or allowing us to do so. Both authors have studied specimens in the Paris and London Museums.

Because Cartwright was chiefly responsible for the subfamily Aphodiinae and Gordon for the most part for the remainder of the paper, we have indicated the author of each new species either as Cartwright or as Gordon.

ZOOGEOGRAPHY

The origin of the scarab fauna of Micronesia, deduced from knowledge of present day faunas of other areas, would indicate part from Asia, and part from the New World. The present Micronesian fauna now includes some which are probably endemic, descendents of long extinct emigrant progenitors. *Omorgus suberosus* (F.), probably originating in South America and now found throughout the Western Hemisphere and in Australia, is apparently on the way to becoming cosmopolitan. *Aphodius lividus* (Olivier) is a cosmopolitan species. Probably most of the species of Scarabaeidae now found in Micronesia have been introduced by man, either through commerce or wartime activities. Nearly all of these have come from the west (East Indies, Philippines, Southeast Asia). Of the previously described species found in Micronesia, *Lepidiota carolinensis* Arrow, *Trichiorhyssemus esakii* Nomura, *Termitodiellus esakii* (Nomura) and *Ataenius yasamatsui* Nomura are apparently endemic. The new species described herein may also be endemic, but because of the incomplete knowledge of the fauna of New Guinea and the East Indies, some may turn out to be introductions. *Ataenius nocturnus* (Nomura) is also found in the United States (California, Arizona) and *Ataenius pacificus* Sharp was described from the Hawaiian Islands. *A. pacificus* may well be native to another part of the world and introduced into the Hawaiian Islands from which it was described.

SYSTEMATICS

The definition of the family Scarabaeidae used here is broader than that currently used by many workers, notably those residing in Europe. We prefer to continue the use of the family name in the broad sense with taxa such as Aphodiinae, Melolonthinae, etc., maintained at the subfamily level rather than raised to family status. We are of the opinion that any and all scarab beetles are easily recognized as such so long as the family name Scarabaeidae is used, but that identity is easily lost if the older subfamilies are given full

Table 1. Distributional List of Micronesian Scarabaeidae

	Micronesian Islands Groups													
					Caroline									
	Bonin	Volcano	N. Mariana	S. Mariana	Palau	Yap	Caroline Atolls	Truk	Ponape	Kusaie	Wake	Marshall	Gilbert	Other Localities
1. Onthophagus armatus				×										Indochina Malaysia, Philippines
2. Aphodius lividus			×	×										Worldwide
3. Trichiorhyssemus esakii	×				×							×	×	
4. Termitodiellus esakii						×								
5. Saprosites pygmaeus				×	×	×	×	×	×	×		×		Tahiti, Hawaii, Philippines, Java, Fiji, Kure
6. Saprosites gressitti*					×									
7. Ataenius orbicularis				×	×			×	×	×		×		Samoa
8. Ataenius nocturnus				×		×				×				United States (Cal., Ariz.)
9. Ataenius peregrinator				×	×		×			×		×		Celebes, Borneo
10. Ataenius yasumatsui				×		×		×				×		
11. Ataenius pacificus				×										Hawaii
12. Pterorthochaetes picinus					×									Philippines
13. Omorgus suberosus				×										Western Hemis. Australia
14. Microserica guamensis*				×										
15. Phyllophaga bipunctata				×										Philippines
16. Lepidiota carolinensis				×	×									
17. Lepidiota dybasi*					×									
18. Lepidiota furtiva*					×									
19. Anomala orientalis	×	×												Japan, Pacific Region, Eastern United States
20. Anomala sulcatula				×										Philippines, North Borneo
21. Adoretus sinicus				×	×									China, Formosa, Pacific Region
22. Adoretus kororensis*					×									
23. Parastasia guttulata					×	×								Bismarck Archip., New Britain, Duke of York group, Shortland Is. Solomon Archip.
24. Oryctes rhinoceros					×									Oriental Region
25. Papuana hubneri													×	Duke of York I. New Britain
26. Anoronotum rufum					×									
27. Protaetia fusca				×										China, Burma, India, Australia, Polynesia

*Described as new.

family rank. Raising them to full family rank seems to be neither necessary nor justifiable.

There has been considerable discussion as to the correct generic name to be used for the group of species which have been placed in *Phyllophaga* (American species), *Lachnosterna* (American species), and *Holotrichia* (Oriental species) by various authors. *Phyllophaga* Harris (1826) has priority but was not considered by Arrow (1944) to have been properly proposed. Arrow supported the use of *Lachnosterna* Hope (1837) on the basis that it had been described and a genotype designated whereas *Phyllophaga* had not been described, although Harris included several valid American species in his discussion. The name *Holotrichia* Hope (1837) should be placed in synonymy as proposed by Arrow (1944) as *Lacnhosterna* has page priority and is almost certainly not generically distinct from *Holotrichia*. There remains the question whether *Phyllophaga* or *Lachnosterna* is the correct name to apply to this group of species. We are of the opinion that the name *Phyllophaga* is valid and that the fact that Harris included several valid species constitutes an "indication" as defined in the International Code of Zoological Nomenclature, even through he did not distinguish the genus by any characters or designate a type of the genus. *Melolontha hirticula* Knoch was selected as the type of the genus *Phyllophaga* by Glasgow (1916). Sanderson (1951) discussed the matter thoroughly and proposed to use the name *Phyllophaga* until the matter could be settled by the International Commission on Zoological Nomenclature.

In order to avoid creating synonymy, descriptions of species from adjacent areas have been checked and Micronesian examples compared with types in the British Museum, Paris Museum and the Humboldt University Museum. As far as we know, the species described as new in this paper are not represented in those collections.

Key to Micronesian Subfamilies of Scarabaeidae

1. Elytron rough, dull; 2nd antennal segment inserted behind apex of 1st segment...**Troginae**
   Elytron smooth, usually shining; 2nd antennal segment inserted at apex of 1st segment...2
2. Body and legs contractile ....**Ceratocanthinae**
   Body and legs not contractile..3
3. Last segment of antennal club dull, tomentose..4
   Last segment of antennal club shining, may be sparasely pubescent, never tomentose.........5
4. Hind tibia with 2 apical spurs; all coxae narrowly separated.........................**Aphodiinae**
   Hind tibia with 1 apical spur; middle coxae widely separated..................**Scarabaeinae**
5. Claws on hind leg unequal in length; hind tibia with 2 apical spurs..................**Rutelinae**
   Claws on hind leg equal in length; or hind tibia without apical spurs..........................6
6. Mandibles expanded, leaf-like, visible in dorsal view................................**Dynastinae**
   Mandibles not expanded or leaf-like, not visible from above......................................7
7. Clypeus laterally emarginate in front of eye, antennal insertion visible from above .... **Cetoniinae**
   Clypeus not laterally emarginate, antennal insertion not visible from above...**Melolonthinae**

Subfamily SCARABAEINAE

A single genus and species of this subfamily is thus far known from Micronesia. Most members of the Scarabaeinae are dung feeders and because of this habit, some species have been transported by commerce to various parts of the world where they have become established.

1. Onthophagus armatus Blanchard (figs. 1, 2, 23)

Onthophagus armatus Blanchard, 1853: 98.

Onthophagus luzonicus Lansberge, 1883: 15.

MALE. Length 7.6 mm, width 4.90 mm. Form oval, elytron rounded in posterior one-third. Head with 2 large, sinuate horns between eyes, horn curved inward, then outward at apex,

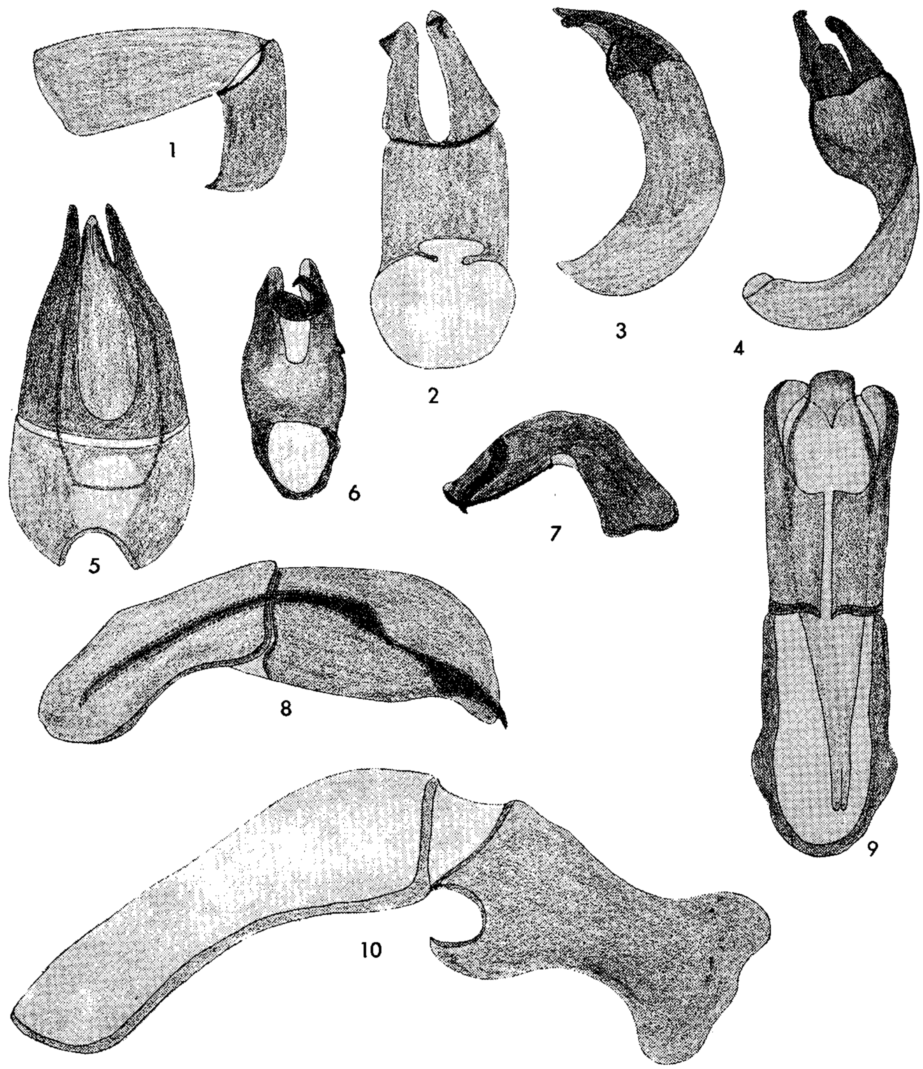


FIGURE 1–10. Male genitalia. 1, 2, *Onthophagus armatus* Blanchard (lateral and ventral); 3, 4, *Pterorthochaetes picinus* (Sharp) (lateral and ventral); 5, *Omorgus suberosus* (F.) (ventral); 6, 7, *Microserica guamensis* n. sp. (lateral and ventral); 8, 9, *Phyllophaga bipunctata* (Brenske), n. comb. (lateral and ventral); 10, *Lepidiota carolinensis* Arrow (lateral).

horns connected basally by a broad, nearly flat flange, median area of head including flange very finely alutaceous, extremely finely punctured, punctures separated by 4 or 5 times their diameter, clypeus more coarsely punctured, punctures separated by 2 or 3 times their diameter, anterior margin of clypeus bidentate (fig. 23). Pronotum 2.6 mm long, 4.5 mm wide, anterior margin strongly sinuate, produced medially, base distinctly margined, broadly arcuate, posterolateral angle obsolete, broadly rounded, anterolateral angle abruptly rounded, disc evenly rounded, abruptly descending at apical one-third, surface finely alutaceous, punctures equal in size to clypeal punctures, separated by 2 or 3 times their diameter, a distinct impression inside postero-lateral angle; propleuron with a single row of stiff setae rising from elongate punctures near lateral margin, visible in dorsal view. Elytra 3.5 mm long, 4.6 mm wide, striae distinct, punctured, punctures separated by nearly twice their diameter, intervals alutaceous with scattered punctures separated by 1 to 3 times their diameter. Mesosternum smooth, nearly impunctate medially, punctures becoming coarse and numerous laterally. Abdominal sterna alutaceous, each with a transverse row of setigerous punctures. Pygidium feebly convex, coarse punctures separated by 1 or 2 times their diameter. Anterior tibia with 4 large teeth and several small teeth on outer margin, small teeth occurring between base and 1st large tooth and between each large tooth, apex of tibia obliquely truncate with a large, curved spur inside tarsal insertion, a row of small tubercles with setae rising in front of each tubercle on upper surface extending from base of femur to base of penultimate tooth; middle and hind tibiae strongly widened at apex, middle tibia with 2 slender, pointed spurs, inner spur two-thirds as long as outer, posterior tibia with a single long, slender spur; middle and hind tarsi with basal segment longer than next 3 segments, inner margin of 1st 4 segments with a fringe of dense, golden setae. Genitalia with apex of lateral lobe curved downward, pointed in lateral view, in ventral view left lobe angulate on outer margin, right lobe with small, ventral tooth (figs. 1, 2).

Type: Not examined, probably in Museum National d'Histoire Naturelle, Paris.

Type locality: South Borneo: Banjermassin.

Specimens examined: 1.

DISTRIBUTION. Mariana Islands: Guam.

This is a dung feeding scarab, certainly an introduced species which could conceivably become widespread in Micronesia. *O. armatus* is found throughout Indochina, the Malay Archipelago and the Philippines and was probably introduced from the latter locality.

SUBFAMILY APHODIINAE*

The subfamily Aphodiinae is represented in Micronesia by four tribes which include five genera of aphodiine scarab beetles: Aphodiina with the single world-wide species, *Aphodius lividus* (Oliv.); Eupariina with two genera, *Saprosites* (two species) and *Ataenius* (five species) [Keys to these genera are presented separately]; Psammodiina with a single species, *Trichiorhyssemus esakii* Nomura; and Rhyparиina with one species, *Termitodiellus esakii* (Nomura).

*Study of this subfamily was supported in part by National Science Foundation Grant GB-1434 to O. L. Cartwright.

Key to Genera of Aphodiinae found in Micronesia

1. Hind tibia with transverse ridges; three tubercles on clypeofrontal suture; pygidium simple .... **Aphodius**
   Hind tibia without transverse ridges; pygidium basally grooved longitudinally...............2
2. Head completely granulate-tuberculate; pronotum with alternating transverse ridges and furrows ....**Trichiorhyssemus**
   Head punctate at least in part; pronotum lacking alternate transverse ridges and furrows...3
3. Elytron with four very noticeable, strong costae, apically with strong fossa and strong, elevated, apical knob ....**Termitodiellus**
   Elytron without strong costae or unusual apical structures..4
4. Head nearly as wide as pronotum; posterior tibia flat and thin, more or less widened apically; 1st segment of posterior tarsus not as long as following two combined..**Saprosites**
   Head usually much narrower than pronotum; posterior tibia not noticeably flat or thin, scarcely widened apically; 1st segment of hind tarsus subequal to following three segments combined ....**Ataenius**

2. **Aphodius lividus** (Olivier)

Scarabaeus lividus Olivier, 1789: 86.

Aphodius lividus: Creutzer, 1799: 44.

Aphodius matusitai Nakane, 1961: A152 **New Synonymy.**

Length 3.8 to 5.2 mm, width 1.7 to 2.2 mm. Oblong, convex, shining, yellow with disc of pronotum, sutural interval of elytra, and parts of the head dark brown. Margin of clypeus weakly emarginate at middle, rounded each side, genae inconspicuous, entire margin finely reflexed; clypeofrontal suture with three tubercles, the median more prominent; entire head with close mixed fine to very moderate punctures; head color somewhat variable but usually dark brown with a light yellowish area each side below the lateral frontal tubercles.

Pronotum 1/4 wider than long, convex, shining, anterior angles narrowly rounded, posterior angles broadly rounded, sides finely margined, base without marginal line, punctures mixed, very fine evenly distributed punctures throughout with scattered, irregularly spaced moderately coarse punctures increasingly numerous toward sides, color usually yellowish laterally and basally with disc and anterior brown.

Scutellum normal in size, twice as long as wide, the anterior half parallel sided; posterior half triangular.

Elytra convex, length about 1.3 times width, striae fine, strial punctures slightly crenating sides of nearly flat intervals, under high magnification, the latter with extremely minute scattered punctures; sutural interval dark brown, next interval yellow, discal area of following five intervals clouded with brown, apex and lateral intervals yellow.

Mesosternum not carinate between coxae. Metasternal midline very fine, not deeply impressed, discal area smooth, shining, minutely punctate, scattered, moderate, setigerous punctures in alutaceous sculpture at sides. Abdominal sterna densely, very moderately setigerously punctate from side to side, the hairs or setae mixed decumbent and erect, very fine and as long or longer than length of sternum, the erect hairs up to twice length of sternum. Pygidium similarly clothed. Antennae pale testaceous. Anterior tibia smooth in front, one or two denticles above the three large lateral teeth; 1st tarsal segment very short, less than half the length of 2nd. Middle and hind femora smooth, shining, about half as wide as long. Terminal fringe of setae on posterior tibia close and equal in length; 1st tarsal segment subequal in length to long spur, and very slightly longer than following 2 segments combined.

Frontal tubercles more prominent in males; pronotum more convex and less punctured. Anterior spur a little stouter than in female.

Specimens examined: 199.

DISTRIBUTION: Mariana Islands: Guam, Tinian, Rota, Saipan, Pagan. Ryukyu Islands: Okinawa.

This is a common world-wide species. I am unable to separate the subspecies *matusitai* from typical *lividus* and I believe it is synonymous.

3. **Trichiorhyssemus esakii** Nomura

Trichiorhyssemus esakii Nomura, 1943: 80.

Length 3.2 to 3.8 mm, width 1.4 to 1.8 mm. Elongate, parallel, black, weakly shining, roughly sculptured, pronotum conspicuously fringed with coarse setae, elytra noticeably setigerous. Antennae testaceous.

Head strongly convex, clypeus subangulate each side of wide, moderately deep median emargination, sides arcuate, genae inconspicuous, surface shining just back of median emargination, densely tuberculate throughout, the tubercles larger over anterior half and gradually smaller to base of head, entire surface, even the tubercles, finely alutaceous.

Pronotum 1.4 times as wide as long, approximately half as long as elytra, convex, sides slightly arcuate around a somewhat explanate area in anterior angles, a trifle sinuate before shallowly emarginate hind angles, entire side margin noticeably, coarsely, crenate with a fringe of quite close, coarse, moderately long yellowish setae, the fringe continuing around the base is gradually very short opposite the 4th elytral interval, then increasingly and noticeably long opposite scutellum; discal surface with six transverse ridges, the 1st along anterior margin comparatively wider and composed of distinctly separated coarse tubercles, 2nd, 3rd, and 4th much more conspicuous, with many of the coarse tubercles uniting into narrow shiny ridges, 4th more likely to show distinct tubercles, 5th and 6th ridges much less distinct with tubercles not coalescing, a median more or less distinct longitudinal furrow usually interrupts all but the 1st ridge, and frequently not 2nd, rarely not 3rd; 4th ridge usually bends back along median furrow to join 6th and thus enclose the 5th between them; transverse furrows between ridges finely tuberculate, furrow between 3rd and 4th ridges noticeably wider; laterally the pronounced median swelling is posterior to a wide depressed or explanate area in the anterior angles, swelling noticeably tuberculate, depressed area less so, under high magnification the entire pronotum, even the tubercles, finely alutaceous.

Elytra convex, humeri dentate, striae moderate, strial punctures deep, separated by 5 or 6 times their diameters and crenating sides of elytral intervals. Elytral intervals moderately convex, with a row of deep setigerous punctures along inner margin combined with deep crenations on opposite side breaking intervals into rough, irregular tubercles. The coarse, yellowish, erect setae quite conspicuous, their length approximately half the width of intervals. Entire surface finely alutaceous.

Mesosternum weakly, finely carinate between coxae. Metasternal midline long, extending forward between middle coxae, deeper at each end, disc and outward toward sides with close coarse, shallow punctures separated by their own diameter or less, surface at extreme sides scabrous with mixed shallow punctures, small tubercles and alutaceous sculpture, large triangular area anterior to posterior coxae deep, well defined, margin deeper than discal area of triangle. Abdominal sterna with crenate anterior margin, crenations deeper and longer on each following sternum, about half length of terminal sternum; posterior margins of anterior sterna with marginal row of close, coarse punctures uniting posteriorly to leave a serrate

border, a somewhat similar but coarser serrate or zigzag, transverse, median line, this line absent from penultimate and terminal sterna. Except for very narrow apical border, surface of pygidium eroded and rough with punctures, tubercles, and alutaceous sculpture; apical margin with 4 long, stiff, well-separated setae. Anterior femur with deep strong anterior marginal line, surface elsewhere scabrous with tubercles, setigerous punctures and alutaceous sculpture. Middle and posterior femora with scattered coarse, setigerous punctures and deep, complete posterior marginal line. Posterior tibial fringe with group of three and four setae each side of space opposite 1st tarsal segment. First posterior tarsal segment as long as long spur, subequal to length of following three segments combined.

Type: Destroyed during World War II. Original type from Peleliu, Palau Islands.

Type locality: Palau Islands: Peleliu.

Specimens examined: 69.

DISTRIBUTION: Gilbert Islands: Tarawa Atoll. Bonin Islands: Chichi Jima. Marshall Islands: Kwajalein. Caroline Islands: Palau: Peleliu.

This species should be easily separated from other Micronesian Aphodiinae since it is the only species having alternating ridges and furrows across the pronotum and the elytra with coarse, yellowish erect setae. Unfortunately we did not see specimens from the type locality, Peleliu, Palau Islands, and for this reason a neotype was not designated.

4. Termitodiellus esakii (Nomura) (fig. 25)

Termitodius esakii Nomura 1943: 81.

Termitodiellus esakii: Nakane, 1961: A152.

Length 3.0 to 3.3 mm. Width 1.4 to 1.5 mm. Oblong, roughly sculptured, shining, blackish brown to black. Head weakly convex, anterior half of clypeus viewed from below bent downward with a single median toothlike angle directed posteriorly, slightly sinuate each side to a slight angulation, then arcuate to genae and below a slight overhang extending forward from genae; viewed from above the slight overhang appears as lateral edge of clypeus, clypeofrontal suture sinuate with a median angulation posteriorly; anterior half of clypeus smooth and shining but with scattered minute punctures visible under high magnification, each puncture with an extremely fine decumbent hair directed forward, upper half shining but with distinct, fine, shortly setigerous punctures mostly grouped at sides and around two vague, parallel, longitudinal basal ridges with slightly depressed median furrow between them, the ridges closely very finely punctate; front with four low, elongate tubercle-like ridges, the middle two closer together with clypeofrontal suture angling upward between them, tubercles topped with a close group of short setae, surface everywhere densely, quite coarsely, setigerously punctate, setae very short; genae obtusely rounded. Pronotum averages about 1.4 mm wide and 0.8 mm long; sides strongly sinuate-excavate leaving two rounded lobes anteriorly and two sharp angles posteriorly, margin fringed with close very short setae; six equidistant, longitudinal, tubercle-like ridges along anterior border which represent anterior ends of much broken parallel ridges to base of the pronotum, all ridges broken by a deep transverse furrow at anterior third, middle two ridges continue toward base but are broken again at their middle; next outward ridge represented posteriorly by only a very small tubercle near base of pronotum; outside ridges almost complete but curve outward at deep transverse furrow and continue

arcuately unbroken to basal lateral tooth of pronotal margin; transverse furrow much deeper near outside ridge; laterally beyond outside ridge the surface somewhat explanate; surface finely, densely punctate along anterior margin and between six anterior tubercles, elsewhere closely, moderately coarsely punctate except for a shiny smooth spot in anterior angles and in deep fossae on inward side of outer ridges; all punctures with very short inconspicuous setae.

Elytra widest through shoulders, averaging about 1.5 mm, length averaging about 2.1 mm. Each elytron with four strong carinae, not counting slightly cariniform edge along elytral suture. The two more conspicuous discal carinae high and sinuate, the posterior ends curving downward and forward in a deep apical fossa; 3rd, forming the apparent humerus, slightly sinuate and ending posteriorly very close to end of 2nd; 4th, anteriorly hidden from above, sinuate, curving upward at end to form a large double terminal knob opposite end of 1st, with a very deep fossa between them; knob with a group of contiguous glandular hairs protruding into fossa below end of 1st carina, carinae topped with very close, short arcuate setae; surface between 3rd and 4th carinae over posterior half and in deep fossa very smooth, shiny, and impunctate, elsewhere surface between carinae shining but with very noticeable, close, very coarse, deep, setigerous punctures, setae short, punctures on apical knobs dense and much smaller; a shining, smooth, impunctate spot apically below the knobs.

Prosternal process separated into two pieces, anterior piece narrow and thin, its upper margin emarginate when viewed from side; posterior piece with flattened, elongate, triangular anterior part bending up between coxae, posteriorly sharply elevated to a sharply pointed equilateral triangle. Mesosternum and metasternum at different levels joined by a very narrow, keel-like, arcuate to more or less vertical carina; mesosternum shagreened with evenly distributed, very fine, short decumbent, golden hairs, discal area at deeper level than flat smooth margins along posterior coxae, a small smooth shiny triangular area at base of vertical carina. Moderately short deep metasternal midline beginning in distinct pit about even with posterior edge of middle coxae, extending back in an increasingly wider deeper line to large, deep pit at posterior end; disc of metasternum with fine scattered punctures, separated by one to two times their diameters; slightly larger punctures outward to sides, sides with deep, coarsely punctate marginal groove, groove turning inward at posterior end and continuing half way along anteriorly arcuate posterior margin. Abdominal sterna separated by wide deep sutures, very finely setigerously punctate from side to side, a large deep coarsely, roughly punctate depression at extreme sides; terminal sternum in male coarsely punctate, three times as long as much narrowed middle of the penultimate sternum. Female, penultimate sternum scarcely emarginate at middle. Pygidium roughly, coarse, closely punctate.

Anterior femur convex, emarginate along posterior margin, margined along anterior edge, with two long stiff setae near trochanter separated by their own length; surface closely, finely setigerously punctate; anterior tibia with three close anterior teeth, outside tooth slightly larger and directed laterally, the other two pointed forward; outside margin arcuate with five small lateral denticles at widest area. Middle femur swollen and arcuate forward at middle, finely, setigerously, punctate as on all femora, the punctures separated by about their own diameter. Posterior femur like middle femur but its posterior margin slightly sinuate and the swollen part with arcuate femoral margin at outer 3rd. Middle and hind tibiae slightly arcuate, surface punctures very slightly coarser than those of femora; without terminal spurs. First segment of posterior tarsus subequal to length of following three segments combined.

Type: Destroyed during World War II. Original type from Yap. NEOTYPE, PRESENT DESIGNATION. USNM No. 71439.

Type locality: Yap Island, July-August 1950, R. J. Goss.

Specimens examined: 10.

DISTRIBUTION: Yap Island in the Caroline group.

This remarkable insect is closely related to *Termitodius* and *Rhyparus*. It is found in the nests of the termite *Kalotermes kanehirae* Oshima according to Dr Sizumu Nomura who described this unusual aphodiine scarab.

KEY TO MICRONESIAN SPECIES OF SAPROSITES

1. Length 2.5 to 3 mm...**pygmaeus** Harold
   Length 4.5 mm...**gressitti** n. sp.

5. **Saprosites pygmaeus** Harold

Saprosites pygmaeus Harold, 1877: 91.

Length 2.2 to 2.6 mm. Width 0.8 to 1.0 mm. Elongate, subparallel, shining, dark reddish brown. Head evenly convex, almost as wide as pronotum, clypeus broadly rounded each side of a wide rather shallow median emargination, genae rounded, almost right angled, not prominent, clypeal margin finely reflexed; clypeus a little more closely, finely, punctate anteriorly than at middle where slightly finer punctures are separated by about two to four times their diameters, except that at anterior margin punctures appear very evenly spaced and above middle of clypeus very gradually increase in size to base of head; eyes without ocular grooves, blending smoothly with general curvature of head. Pronotum nearly quadrangular, averaging about 0.85 mm wide by 0.6 mm long, disc not strongly convex, lateral margins not completely visible from directly above, sides margined, viewed from side the margins with noticeable bend upward to posterior angles, all angles obtusely rounded, base not margined; surface quite closely, evenly punctate, punctures fine to very moderate, finer at extreme sides, fine in front, gradually larger posteriorly to base. Elytra averaging about 0.9 mm wide by 1.5 mm long, humeri dentate, striae deep with deep moderate punctures crenating sides of very slightly convex intervals, striae and crenations appear rather coarse, being half or more as wide as intervals, intervals with a median row of minute punctures. Mesosternum smooth, shining, convex anteriorly, weakly carinate between coxae, with fine shallow, transverse line between end of intercoxal carina and the more convex anterior part, a few fine punctures outward along middle coxae to a group of similar punctures at sides; mesosternum not quite but almost at same level as metasternum. Metasternum with moderately deep impressed midline, disc minutely alutaceous, with scattered fine punctures generally separated by about four times their diameters, a few larger punctures along lateral edge, a more or less vague, shallow depression in front of posterior coxae. Abdominal sterna deeply depressed and very finely scabriculous along anterior margin, fine scattered punctures from side to side, concave near extreme sides. Pygidium convex, smooth, shining but with close minute punctures, base with deep, vertical groove at tips of elytra. Anterior femur with anterior marginal groove, surface weakly convex, shining, with scattered minute punctures; anterior tibia with three large lateral teeth and small tooth or denticle between widely separated 2nd and 3rd, small triangular tooth on inner margin below tarsus; middle and hind femora similar to anterior but not as wide; middle and hind tibiae gradually widened to apex, tibial fringe of four close setae each side of vacant space opposite 1st tarsal segment; tarsus and tibia about equal in length; spurs arcuate, acuminate, long spur subequal to 1st two tarsal segments combined.

Type: Not seen. Probably in Paris.

Type locality: Iles Key. (Probably Kai Islands south of Vogelkop of West New Guinea).

Specimens examined: 33.

DISTRIBUTION: Caroline Islands: Truk (Moen, Tol); Nama; Ulithi (Mog Mog); Palau (Babelthuap, Koror); Ponape (Ronkiti, Jokaj); Kusaie; Yap. Mariana Islands: Guam. Marshall Islands: Arno. I have seen additional specimens from Tahiti, Hawaii, Kure, Philippines, Java, Fiji.

This is probably the smallest scarab beetle found in Micronesia. It has been collected on Kusaie under dead bark of *Hibiscus tiliaceus*, on Arno Atoll under bark of breadfruit, on Moen under bark of breadfruit, on Babelthuap in old palm log, on Koror under dead bark and a series taken in soil from Fiji. The genus *Saprosites* is usually found under bark of dying and dead trees.

6. **Saprosites gressitti** Cartwright, new species

MALE. Length 4.7 mm. Width 1.7 mm. Elongate, subparallel, shining, dark red-brown. Head broad, evenly convex; clypeus broadly rounded each side of very shallow median emargination, sides slightly arcuate to genal suture, genae slightly extended laterally, sharply rounded, more or less triangular, the exterior angle much less than a right angle; clypeal margin finely reflexed; surface very narrowly concave just behind anterior emargination, very minutely alutaceous above this up to greatest convexity, laterally the marginal area minutely scabriculous beyond median emargination to genae; minute punctures above scabriculous area up over convexity or middle of clypeus then gradually larger and very close along upper edge of clypeus; above clypeofrontal suture coarse punctures become still larger with fine punctures intermixed, densely crowded and practically contiguous. Pronotum 1.7 mm wide, 1.3 mm long, nearly quadrate, widest through anterior angles which appear slightly explanate from above, sides margined, a slight break in direction slightly behind middle, all angles broadly rounded; base sinuate, edge very finely crenate, not margined; surface everywhere with a dense mixture of very fine and moderately coarse punctures, the latter becoming smaller toward sides, base and anterior margin. Elytra 2.8 mm long, 1.8 mm wide, humeri not strongly dentate, sides very slightly arcuate, striae deep, coarsely, closely deeply punctate, punctures separated by their own diameters, about 1/3 as wide as intervals, slightly crenating the sides of the intervals; intervals flat with a row of close fine punctures along each side, a very few additional scattered between the rows, humeri closely finely punctate. Mesosternum smooth lengthwise at middle with a slight transverse depression slightly in front of the intercoxal carina, densely finely punctate laterally from median smooth area. Metasternal midline fine, impressed only slightly, coarsely closely punctate on disc and part way to sides where the punctures are half as large; a vague, slightly depressed triangular area in front of hind coxae minutely roughened, almost smooth. The four visible abdominal sterna smooth, all with scattered fine and very fine punctures toward sides, penultimate sternum greatly shortened at middle, about half as long as those preceding, terminal sternum twice as long. All sterna with an anterior border of crenate-scabrous sculpture which becomes gradually much wider at sides. Pygidium convex apically, slightly concave basally, scattered moderate punctures apically, more densely punctate basally; pygidium grooved lengthwise basally as usual in the tribe Eupariina. Anterior femur with

perimarginal groove, nearly twice as wide as middle and hind femora, surface finely scabrous; anterior tibia with three large lateral teeth, very finely denticulate above, inner apical margin sharply angular behind the foretarsi. Middle and hind femora narrow, somewhat scabrously finely punctate, with strong, deep entire posterior marginal groove. Middle and hind tibiae suddenly narrowed basally, not greatly widened apically, apical fringe of nine short setae, tarsi 1/3 as long as tibiae; spurs arcuate, slender, acuminate, the long spur equal in length to 1st two tarsal segments combined.

Type: U. S. National Museum of Natural History, No. 71376.

Type locality: Collected on Angaur I., Palau Islands, Feb. 3, 1948, by H. S. Dybas.

FEMALE. Length 4.7 mm. Width 1.8 mm. Few differences were noted. The clypeus only slightly depressed behind anterior emargination with surface within closely, minutely transversely wrinkled. First of four visible abdominal sterna smooth, 2nd with scattered fine and very fine punctures toward sides, the penultimate with a mixture of scattered still larger and more numerous fine punctures, terminal sternum with moderately dense, very fine punctures only. The 1st three sterna about equally long, the terminal only slightly longer. Pygidium with apical minutely punctate lip, disc concave, with close, very moderate punctures, slightly closer at base.

Allotype female collected on Koror, Palau Islands, March 15–25, 1948, by K. L. Maehler. One female paratype collected on Koror Island, Palau group, March 20, 1948, by K. L. Maehler.

This species, known only from the Palau Islands, is named in honor of Dr J. L. Gressitt, who more than any one else has been the leader in the faunal survey of the Micronesian Islands.

S. gressitti may be separated from *S. pygmaeus* by size alone since it is twice as long and appears even larger. In addition *A. gressitti* has mixed pronotal punctures and sharply angulate genae, contrasted with uniform pronotal punctures and rounded genae in *S. pygmaeus*.

Key to Micronesian Species of Ataenius

1. Clypeus broadly rounded each side of median emargination..2
   Clypeus dentate each side of median emargination..3
2. Large species, length 4.7 to 5.0 mm; clypeus with transverse wrinkles anteriorly; pronotum with scattered mixed fine and moderate punctures ....**orbicularis** Schmidt
   Smaller species, length 2.8 to 3.6 mm; clypeus with dense, elongate, longitudinal punctures; pronotum with dense, uniform punctures ....**nocturnus** (Nomura)
3. Small slender species, length 3.3 mm; punctures of clypeus dense, round, simple .... **peregrinator** Harold
   More robust species, length 3.7 to 4.6 mm; punctures of clypeus dense, elongate longitudinally 4
4. Posterior angle of pronotum slightly emarginate, base sinuate; elytral intervals convex, shining but minutely alutaceous, a row of coarse punctures along each side, outer row noticeably setigerous ....**yasumatsui** Nomura
   Posterior angle broadly rounded, base arcuate; elytral intervals with row of close

tubercles along outer margin; flat and noticeably alutaceous inside; very short inconspicuous setae between the tubercles..**pacificus** Sharp

7. **Ataenius orbicularis** Schmidt

Ataenius orbicularis Schmidt, 1914: 697.

Ataenius cognatus: Chapin, 1942: 168 (Not LeConte, 1858: 65).

Ataenius nitidulus Nomura, 1943: 78 **New Synonymy.**

Length 3.5 to 5.0 mm. Width 1.5 to 2.2 mm. Oblong, convex, shining, black; legs, anterior margins of head and pronotum reddish. Head moderately convex; clypeus rounded each side of moderately deep median emargination, sides very weakly arcuate to right angled genae, edge finely reflexed, surface quite strongly transversely wrinkled upward to greatest convexity, then closely very finely punctate to frontal area which shows a mixture of fine punctures and a transverse band of very moderate to moderate punctures. Pronotum averaging about 1.3 mm long by 1.7 mm long, moderately convex, anterior angles obtusely rounded, posterior angles very broadly evenly rounded from sides into base, sides and base strongly margined, fringed with fine, rather inconspicuous setae, separated at sides by nearly twice their very moderate length, marginal crenations very weak and almost invisible; surface throughout with a mixture of close very fine and moderately coarse punctures, the latter irregularly scattered over disc, slightly larger and closer toward sides, then sparse, near lateral margin, separated by less than their diameter in areas of greatest density. Elytral length 1-1/2 times width, sides subparallel, humeri weakly, inconspicuously dentate; striae fine, moderately deep, strial punctures deep, crenating inner margin of moderately convex intervals, lateral intervals not different, surface with minute scattered punctures separated by two or three times their diameters. Mesosternum shagreened with contiguous fine punctures and fine short, decumbent hair, weakly carinate between the coxae. Metasternum smooth, shining, midline fine, long, not deeply impressed, a few fine punctures anteriorly, a group of close moderate punctures over posterior half near midline, smooth and shining outward to sides, a strong triangular depression in front of posterior coxae. Abdominal sterna shining with scattered fine shallow punctures at middle, increasing in size toward sides; 1st visible sternum with very fine posterior marginal line, all others finely crenate along anterior margin. Pygidium with wide apical lip, roughly eroded basally. Anterior femur with perimarginal groove, surface smooth shining with scattered minute punctures. Middle and posterior femora similarly smooth and shining, with very fine posterior marginal line only visible from the rear over outer half of the femur; posterior tibial fringe of five short setae, a very short accessory spine of equal length and an intervening seta between spine and spurs, long spur, 1st tarsal segment and following three segments combined, about equal in length. Males have anterior spur bent inward at tip and terminal abdominal segment relatively shorter than in female.

Type: In Schmidt collection, Riksmuseum, Stockholm.

Type locality: Samoa.

Specimens examined: 365.

DISTRIBUTION: Mariana Islands: Saipan, Tinian, Guam, Rota. Caroline Islands: Palau (Babelthuap, Koror); Truk; Ponape; Kusaie. Marshall Islands: Arno.

Ataenius orbicularis Schmidt is very close to *Ataenius californicus* Horn, 1887: 84, in almost all characters including their unusual genitalia. The only dif-

ferences easily discernible are the very coarse pronotal punctures and more sharply rounded posterior angles in *Ataenius californicus*. I have seen the types of both species.

8. Ataenius nocturnus (Nomura), NEW COMBINATION

Saprosites nocturnus Nomura, 1943: 77.

Ataenius gracilis: Chapin, 1942: 167; Nakane, 1961: A152 (Not Melsheimer, 1844: 137).

Length 2.6 to 3.6 mm. Width 1.0 to 1.7 mm. Moderately shining piceous, legs and anterior margin of head and pronotum reddish, elongate, parallel, only weakly convex. Head convex, margin very finely reflexed, rounded each side of broad, shallow median emargination, sides very weakly arcuate to right angled genae; surface shining and slightly uneven close to median emargination, elsewhere with close elongate punctures united in lines except at middle of occipital area where somewhat larger punctures are rounded in shape, punctures dense everywhere, separated by less than their diameters. Pronotum nearly quadrate, averaging about 1.1 mm wide, 0.8 mm long; base and sides finely margined, without marginal setae, anterior angles rounded, posterior angles very broadly rounded; surface closely punctate, the punctures generally moderate in size, a little finer near lateral and anterior margins, a trifle larger and shallower near lateral foveae, midline distinct and deeper over basal half, the punctures here practically uniting in a narrow row. Elytra averaging about 2.0 mm long, 1.2 mm wide, humeri finely dentate, striae deep; finely crenate punctate intervals convex, with medium row of minute punctures, minutely alutaceous along inner edge, sutural interval flat with row of close fine punctures, lateral intervals not noticeably different. Mesosternum broadly carinate between coxae. Metasternum smooth and shining over disc, midline strong and deep, punctures moderately coarse and close anteriorly, much finer posteriorly, scabriculous at sides, triangular depression in front of posterior coxae deep, sharply defined anteriorly, finely alutaceous within. Abdominal sterna finely crenate along anterior margin, surface with scattered fine to very moderate, evenly spaced punctures generally separated by one or two diameters, suture in front of terminal sternum unusually and noticeably deep. Pygidium with deep basal line, disc and apical area very finely closely punctate. Anterior femur with perimarginal line, surface with scattered coarse punctures separated by one diameter or less. Middle femur shining, scattered very fine punctures, posterior marginal line short, one-third length of femur. Posterior femur similar but with marginal line still shorter. Hind tibiae without accessory spine, fringe of nine short close setae, tarsus shorter than tibia, 1st tarsal segment one-fourth longer than long spur, equal to following three segments combined.

Males have penultimate abdominal sternum shortened to near half length of the preceding sternum and terminal sternum about as long. The female abdominal sterna almost of equal length.

Type: Described from Saipan and Kusaie. Original type destroyed in World War II. NEOTYPE in USNM No. 71443.

Type locality: Saipan.

Specimens examined: 340 (many more in capsules).

DISTRIBUTION: Mariana Islands: Saipan, Tinian, Rota, Guam. Caroline Islands: Yap; Kusaie.

This species is very similar to *gracilis* (Melsheimer) but may be separated

from that species by the short posterior femoral line of middle femur usually less than half the femoral length, and by the smooth, evenly convex elytral intervals. In *Ataenius gracilis* the posterior femoral line of the middle femur is always deep and complete, the elytral intervals are flattened and alutaceous along the inner margin. Four specimens from Guam and one from Saipan are exceptional in having a complete femoral line on the middle femora but have the rounded, smoothly convex elytral intervals.

Ataenius nocturnus (Nomura) has been taken also in California and Arizona in the United States.

9. **Ataenius peregrinator** Harold

Ataenius peregrinator Harold, 1877: 96.

Ataenius sumatrensis Balthasar, 1941: 184 **New Synonymy.**

Length 3.2 to 3.5 mm. Width 1.2 to 1.3 mm. Elongate, parallel, shining, convex, dark red brown to reddish black; legs, anterior margins of head and pronotum reddish. Head moderately convex, clypeus finely, triangularly dentate each side of a wide, shallow, slightly angulate median emargination, sides arcuate to right angled genae, edge finely reflexed; strongly shining, roughly, coarsely punctate, wrinkled below greatest convexity behind median emargination; slightly concave near median margin; head surface elsewhere evenly, closely, very moderately punctate, punctures separated by their own diameters or less. Pronotum subquadrate, about 1.2 mm wide by 0.9 mm long, anterior angle obtusely rounded, sides nearly straight to middle then angled upward to broadly rounded hind angles, sides and base margined, edge minutely fimbriate-crenate, setae scarcely longer than wide, separated by four times their length; surface closely, evenly, very moderately punctate throughout, punctures separated by their diameters more or less, a trifle smaller along anterior margin. Elytra about 2.0 mm long by 1.2 mm wide, humeri very weakly, inconspicuously dentate; elytral striae moderately deep, strial punctures crenating sides of the weakly convex intervals, sutural interval with row of close very fine punctures, others with similar row along outer margin, lateral intervals slightly more roughly punctate with punctures near middle of intervals, shoulders finely, closely punctate, apically all intervals more convex with row of punctures down middle, punctures minutely setigerous under high magnification. Mesosternum shagreened with minute punctures and short, fine, decumbent hair; broadly, weakly carinate between the coxae. Metasternum shining, midline long, moderately deep and wide, very finely alutaceous within, disc with scattered very moderate punctures anteriorly and outward, and very fine posteriorly, finely scabrous at sides, triangular area anterior to posterior coxae, depressed with trace of alutaceous sculpture and a few fine punctures. Abdominal sterna closely, moderately punctate from side to side, finely crenate along anterior margin. Eroded area of pygidium finely scabrous. Anterior femur with perimarginal groove, shining smooth with a few mixed very fine and moderate punctures. Middle and hind femora similarly smooth and punctate, middle femur with deep, posterior femoral line on outer half, hind femur with very short line at knee. Posterior apical tibial fringe of eight close, moderately short setae, without accessory spine. Long spur and 1st tarsal segment equal in length, slightly longer than next three tarsal segments combined. In male two terminal abdominal sterna shorter and pygidium longer than in female.

Lectotype: In Harold collection, Muséum National d'Histoire Naturelle, Paris, France.

Lectotype locality: Celebes.

Specimens examined. 15.

DISTRIBUTION: Marshall Islands: Arno Atoll. Caroline Islands: Palau (Angaur, Peleliu): Kusaie. Mariana Islands: Saipan, Tinian, Agiguan, Guam.

I have seen the type of *Ataenius sumatrensis* Balthasar and can find nothing to separate it from *peregrinator* Harold. A long series of the latter from the Philippine Islands varies from 2.7 to 3.4 mm in length and includes specimens duplicating *sumatrensis* in every detail. I believe the two are the same.

10. **Ataenius yasumatsui** Nomura

Ataenius yasumatsui Nomura, 1943: 79.

Length 4.2 to 4.9 mm. Width 1.0 to 2.1 mm. Elongate, oblong, shining, elytra rough and setigerous. Head convex, clypeus triangularly, sharply, dentate each side of a wide, moderately deep, median emargination, sides nearly straight to obtusely rounded genae, clypeal margin finely reflexed; surface concave shining and irregularly sculptured anteriorly behind emargination, close, round, simple, moderate punctures narrowly bordering the concave shiny area and across the occiput, elsewhere with close lengthwise elongate punctures, some laterally forming long lines but usually only two or three times their width. Pronotum averaging about 1.9 mm wide and 1.2 mm long, anterior angles very obtusely rounded, sides sinuate to noticeable tooth-like angle slightly posterior to middle then straight to subangulate posterior angles, base slightly but distinctly angulate at middle; sides and base margined except anterior half of sides around anterior angles, sides and base crenate-fimbriate, the setae short, separated by their own length; surface closely punctate throughout, quite fine in median anterior area of disc, gradually increasingly coarse, shallower and crowded to base and sides, about four times as large as along anterior margin. Elytra averaging about 2.0 mm wide by 3.0 mm long, humeri finely dentate, striae deep, strial punctures deeply, coarsely crenating inner margins of intervals, intervals moderately convex, a row of very moderate setigerous punctures along outer edge, setae semierect, their length generally half distance between them; laterally coarse, setigerous punctures form a median row giving interval a tuberculate appearance, apically striae becomes wider, intervals narrow and more convex, broken by median row of setigerous punctures. Mesosternum shagreened with dense fine punctures and short fine hair, broadly triangularly carinate between coxae, median surface of triangle deeply excavated leaving shiny edges. Shining metasternum with long, fine, rather shallow midline ending anteriorly in deep pore at base of mesosternal intercoxal triangle, disc and outward to sides with scattered irregularly spaced coarse punctures separated generally by more or less their own diameters, depressed triangular area usually found in front of the posterior coxae becoming in this species a long finely densely punctate bordering line, in front of a smooth, shining, impunctate posterior margin adjacent to coxae. Abdominal sterna with scattered punctures from side to side as on metasternal disc, punctures of terminal sternum finer and closer, punctures of the two sterna preceding terminal sternum bordered by a posterior row of fine, close, setigerous punctures; finely crenate along anterior margins, crenations of terminal sternum much deeper and at middle half as long as sternum. Pygidium convex, scabrous, without apical smooth margin, basally with fine marginal carinaform edge. Anterior femur with peremarginal groove, surface rough with shallow, anastimosing moderate punctures. Middle and hind femora with scattered fine to moderate punctures, a few running together at knee, without posterior femoral lines, posteriorly margined with a row of close, short, setae separated by

slightly less than their length. All punctures of underside finely setigerous. Posterior tibial fringe of ten short, close, setae, no accessory spine; long spur shorter than 1st tarsal segment which is longer than following three segments combined. Sexual differences were not observed, possibly all the specimens seen are of the same sex.

Type: Destroyed during World War II. Original type from Truk. NEOTYPE (PRESENT DESIGNATION) Kyushu University.

Neotype locality: Truk: Pata, Sabote-Epin, 5.IV.1940, Yasumatsu et Yoshimura.

Specimens examined: 9.

DISTRIBUTION: Caroline Islands: Palau (Ngergoi=Garakayo); Yap, Truk. Marshall Islands: Arno Atoll (Ine I.). Mariana Islands: Guam.

Most closely resembles *Ataenius canaliculatus* Schmidt 1920: 45, from New Guinea but it is distinct. In *At. canaliculatus* the elytral striae are broken into tubercles even on the disc with two kinds of pubescence, semierect setae from the outside rows of punctures and long, arcuate, recumbent hairs from punctures along the inner margins of the intervals. *Ataenius granulator* Harold, 1877: 95, and *Ataenius idenbergi* Paulian, 1937: 41, both from New Guinea, are also very similar in appearance and have the two kinds of elytral pubescence.

11. **Ataenius pacificus** Sharp

Ataenius pacificus Sharp, 1879: 90.

Length 3.3 to 3.6 mm. Width 1.5 to 1.6 mm. Oblong-ovate, weakly shining, black, anterior of head and legs dark reddish brown. Head moderately convex, clypeus sharply triangularly dentate each side of a wide, median emargination, sides arcuate to sharp, slightly more than right angled genae, head margin finely reflexed; surface along anterior margin strongly shining, reddish-brown, rather coarsely roughly punctate, slightly concave just behind median emargination, clypeus over greatest convexity and above with close, lengthwise elongated very moderate punctures, above frontal suture punctures slightly larger, simple, round, and densely spaced. Pronotum 1.4 mm wide by 1.0 mm long, convex, anterior angles obtusely rounded, sides slightly arcuate and broadly, evenly rounded into base, sides and base margined, minutely crenate-fimbriate, the extremely short setae barely visible, surface of pronotum densely, evenly, very moderately punctate throughout, a trifle smaller along anterior margin. Elytra 2.1 mm long, 1.6 mm wide, numeri finely dentate, striae fine, deep, strial punctures crenating flat, finely alutaceous inner margins of intervals, opposite or outer half of the intervals convex but broken into close tubercles by a row of minutely setigerous fine punctures, lateral intervals with tubercles nearly in middle with both edges alutaceous, 10th or outer interval less convex than 8th and 9th, apically striae wider, intervals narrower, more convex, with tubercles and setae forming a median row. Mesosternum shagreened with dense fine punctures and decumbent fine short hair; finely carinate between the coxae. Metasternum with long, very moderate midline, terminating in deeper pores at each end; anterior two-thirds of disc with close coarse punctures, much finer punctures posteriorly, finely scabrous outward to sides, triangular area in front of posterior coxae long, deep, scabrous within. Abdominal sterna closely, coarsely, shallowly punctate from side to side, finely crenate along anterior margin, crenations of terminal sternum longer and much deeper, terminal sternum closely, and much more finely punctate. Pygidium with fine, shining, apical

margin around finely scabrous eroded disc. Anterior femur with perimarginal groove, closely punctate in front, scabrous posteriorly. Middle and hind femora with scattered, finely setigerous punctures generally separated by two to three times their diameters. Middle femur with strong complete posterior femoral line; hind femur with fine, sometimes broken, less distinct line, posterior tibial fringe of 7 or 8 short close setae, without accessory spine; long spur, 1st tarsal segment, and following three segments combined, equal in length. Male pygidium slightly longer than that of female.

Type: Lectotype in British Museum (Natural History).

Type locality: (Lectotype) Honolulu, Hawaii.

Specimens examined: 2.

DISTRIBUTION: Mariana Islands: Saipan I.

A lectotype was selected by Cartwright in 1964. The Saipan specimens are the first seen from outside the Hawaiian Islands, other than a specimen labeled New Zealand in the British Museum which Sharp mentioned in his original description but apparently did not believe came from New Zealand.

Subfamily CERATOCANTHINAE

This subfamily is represented in Micronesia by a single genus and species. The Ceratocanthinae are a group of scarabs that have become highly modified. The body and legs are completely contractile and very hard, enabling the beetles to completely protect the ventral surface. They are usually found beneath bark of dead trees or in rotten logs and stumps but many species are attracted to light. White (1842) proposed the name *Ceratocanthus* to replace *Acanthocerus* MacLeay (1819), a junior homonym of *Acanthocerus* Palisot de Beauvois (1818), and designated *Acanthocerus aeneus* MacLeay as the type species of *Ceratocanthus*. According to the Rules (Article 39) the family group name Acanthoceridae must be changed to Ceratocanthidae, a procedure which seems not to have been followed by authors since White (1842).

12. **Pterorthochaetes picinus** (Sharp) (figs. 3, 4)

Synarmostes picinus Sharp, 1875: 64.

Pterorthochaetes picinus: Gestro, 1899: 497.

Length 4.0 to 4.2 mm. Width 2.8 to 2.9 mm. Form elongate-oval in dorsal view, nearly round in lateral view, completely retractile, widest across anterior margin of pronotum. Color piceous brown. Clypeus with anterior margin broadly rounded, lateral angle slightly produced, rounded; head and clypeal surface with coarse, dense punctures, each puncture with a short stiff seta and partially surrounded by a strong, impressed line, the impressed lines becoming contiguous near anterior margin. Pronotum and head along with legs completely concealing ventral surface in repose; pronotum broad, extremely convex, widest across anterior angles, anterolateral angle obtusely rounded, posterolateral angle obsolete, margin continuously curved, surface with fine punctures separated by 3 or 4 times their diameter, each puncture with a short, stiff seta and more than half surrounded by a fine,

impressed line, impressed lines absent medially and becoming very coarse and sometimes contiguous near anterolateral angle, surface between lines shining. Elytron strongly convex, lateral margin separated by a deeply impressed stria which extends across apex to 2nd sutural stria, 1st sutural stria distinct and impressed in apical two-thirds of elytron, 2nd sutural stria impressed in apical one-half, much more strongly impressed apically where it joins the lateral stria; surface between 2nd and lateral striae smooth, shining, with more or less even rows of setigerous punctures partially surrounded by impressed lines. Legs with tibiae flattened, outer surface strongly, unevenly sculptured, contractile and concealing ventral surface in repose; anterior tibia narrowed toward apex, outer margin with a series of small teeth beginning at midpoint and increasing in size toward apex, lower surface of inner margin with a stout, hooked spur; outer ventral margin with a groove to fit over inner dorsal ridge of middle tibia. Male genitalia asymmetrical: median lobe reduced, apex rounded, in ventral view left lateral lobe longer than right lobe, in lateral view proximal lobe with apex strongly curved downward, rounded, distal lobe angled downward, apex bluntly pointed, basal piece rounded, curved laterally in ventral view (figs. 3, 4).

Type: British Museum (Natural History).

Type locality: Philippines.

Specimens examined: 3.

DISTRIBUTION: W. Caroline Islands: Palau (Koror).

This species has probably been introduced into Micronesia from the Philippine Islands. The genus occurs in New Guinea, Malaysia, Borneo, Philippines, and Southeast Asia with one species reported from Queensland, Australia. *P. picinus* has, until now, been reported only from the Philippines.

Subfamily TROGINAE

The Troginae are represented in Micronesia by a single genus and species, the widespread *Omorgus suberosus* (F.). This subfamily is composed of the large genus *Trox* and a few small genera, the habits of some of which are not known. *Trox* and *Omorgus* are usually scavengers feeding on feathers or animal hair and are most commonly found around dry carcasses. Many species live in bird nests or mammal burrows and many of them are attracted to light.

13. Omorgus suberosus (Fabricius) (fig. 5)

Trox suberosus Fabricius, 1775: 31.
Trox crenatus Olivier, 1789: 7.
Trox gibbus Olivier, 1789: 13.
Trox ovatus Beauvois, 1805: 175.
Trox denticulatus Beauvois, 1805: 176.
Trox alternatus Say, 1835: 179.
Trox tuberosus LaPorte, 1840: 107.
Omorgus suberosus: Erichson, 1847: 111; Baker, 1968: 6.

Omorgus punctatus LeConte, 1854: 215; Baker, 1968: 6.

Trox nobilis Wollaston, 1867: 93.

Length 12.0 to 15.0 mm. Width 7.80 to 9.50 mm. Form elongate, widest posterior to middle of elytra. Color black but usually completely coated with a dull brown or gray encrustation except on areas of elytral rows. Head with 2 large, median tubercles feebly connected; anterior margin of clypeus triangularly projecting medially; antenna with basal segment black, with dense, reddish setae, segments 2–6 reddish brown, 3-segmented club yellow. Pronotum 4.2 mm long, round punctures scattered throughout, a small, stiff seta arising from anterior margin of each puncture, 4 large blunt basal tubercles and a shallow median groove present, lateral margin fringed with setae, excised in front of posterolateral angle, basal margin strongly emarginate near posterolateral angle. Elytron 10.00 mm long, suture and 4 rows slightly elevated above other rows, elevated rows composed of tomentose tubercles alternated with bare, flat, black areas, the black areas often encrusted, lateral margin with a single row of short setae. Metasternum with shallow, median depression. Abdomen with sterna smooth, round, setigerous punctures scattered sparsely throughout. Anterior tibia tridentate, basal tooth weak, slightly anterior to middle, median tooth large, blunt, immediately behind apex, apical tooth small, blunt, contiguous with median tooth, anterior spur at apex inside tarsal insertion. Middle and hind tibia with 2 apical spurs, inner spur longer than outer. Male genitalia with lateral lobes curved downward, pointed at apex, median lobe shorter than lateral lobe, apex rounded (fig. 5).

Type: Present location unknown.

Type locality: "Brasilia".

Specimens examined: 7.

DISTRIBUTION: Mariana Islands: Agiguan; Rota.

This species is widely distributed in various parts of the world as pointed out by Vaurie (1962). It is apparently native to South America and has been carried by commerce to nearly all parts of the Western Hemisphere south of Canada. Haaf (1958) has reported *suberosus* from Australia. As may be seen, *suberosus* is another introduced species in Micronesia, although it is not possible to say from what part of the world the introduction may have originated. Baker (1968) restored this species to *Omorgus* on the basis of very different larval characters.

Subfamily MELOLONTHINAE

The melolonthines are represented in Micronesia by 3 genera and 5 species. Of these 5 species, 3 are here described for the first time. The Melolonthinae are nearly all leaf-feeding beetles, usually with nocturnal habits. It is a very large subfamily in numbers of species and is distributed throughout the world. Many of the species are attracted to light which is true of all the Micronesian species with the possible exception of *Microserica guamensis*, n. sp.

Key to Micronesian Species of Melolonthinae

1. Elytron with tiny white scales arising from punctures; mentum flat..............................3
   Elytron with setae arising from punctures or apparently no setae or scales present; mentum concave (*Phyllophaga*) or convex (*Microserica*)..2
2. Size small, less than 5.0 mm in length; ♂ antennal club with 4 segments...**Microserica guamensis** n. sp.
   Size large, 15.0 mm or more in length; ♂ antennal club with 3 segments..**Phyllophaga bipunctata** (Brenske), n. comb.
3. Anterior margin of clypeus evenly rounded with no trace of median emargination...**Lepidiota carolinensis** Arrow
   Anterior margin of clypeus distinctly emarginate medially..4
4. Epipleuron with a single row of intermixed long and short setae forming a fringe visible in dorsal view, long setae about 1.0 mm in length basally, decreasing in length toward apex...**Lepidiota dybasi** n. sp.
   Epipleuron with a single row of short setae visible in dorsal view, setae less than 0.5 mm in length basally, decreasing slightly in length toward apex...**Lepidiota furtiva** n. sp.

14. **Microserica guamensis** Gordon, new species (figs. 6, 7)

Holotype male. Length 4.2 mm. Width 3.00 mm. Form short, broad, widest posterior to middle of elytra. Color reddish brown with a pruinose sheen especially strong on dorsal surface. Head alutaceous, coarsely punctured, punctures separated by about a diameter on vertex, becoming denser toward clypeus; anterior margin of clypeus thickened medially, feebly emarginate, front edge strongly punctured; antenna with 4-segmented club strongly lamellate, more than twice as long as 1st 7 segments, 1st segment with conical, seta-bearing protuberance on outer margin. Pronotum 1.2 mm long, 2.4 mm wide, convex, widest across basal margin, alutaceous, indistinctly punctured, punctures separated by a diameter or less, anterolateral angle projecting, bluntly pointed, posterolateral angle abrupt, bluntly rounded, base not margined. Elytra 3.00 mm long, 3.00 mm wide, intervals feebly raised, rounded, small, indistinct punctures scattered throughout; epipleuron with a single row of widely spaced punctures each bearing a stout seta. Metasternum with small, indistinct punctures scattered throughout, a longitudinal row of 3 or 4 coarse, widely spaced, seta-bearing punctures on each side of middle. Abdominal sterna each with a single row of coarse, widely spaced, seta-bearing punctures. Pygidium triangular, indistinctly punctured. Anterior tibia with 2 teeth, apical tooth curved, bluntly pointed, 2nd tooth smaller, immediately behind anterior tooth, bluntly pointed, apical spur longer than 1st tarsal segment, slender, pointed; middle tibia with long, slender spur at apex on inner margin, apex fimbriate with long, unequal, sharp spines; hind tibia with 2 spurs, inner spur slightly sinuate, stout, on inner margin at apex, outer spur nearly as long as 1st tarsal segment, slender, feebly curved, on outer margin at apex, fimbriate with long, unequal spines. Anterior tarsus slightly longer than tibia, basal and ultimate segments slightly longer than rest of segments; middle tarsus twice as long as tibia, last 2 segments shorter than preceding segments; hind tarsus slightly longer than hind tibia, basal segment slightly longer than next 2 segments, inner margin of all segments strongly carinate. Claws on all legs equal with tooth strong, subapical, wide, equal in length to apex. Genitalia asymmetrical; right lateral lobe with blunt tooth on outer margin at base, outer margin heavily sclerotized, ending in a prominent tooth at apex, inner portion pale, feebly sclerotized, rounded at apex; left lateral lobe wide, tapered to broad, bluntly rounded apex; median lobe a heavily sclerotized, curved hook, base thickened, shoe-like, apex pointed, bent downward (figs. 6, 7).

Type: U. S. National Museum of Natural History, No. 71377.

Type locality: Collected on Guam, VI-1945, by J. R. Stuntz.

This species resembles *M. lineatipennis* Moser and *M. sibuyana* Moser most closely in external appearance. The male genitalia of each of the 3 species is highly distinctive. Both *lineatipennis* and *sibuyana* were described from specimens collected in Borneo, and it may be that *guamensis* is also native to Borneo and has been introduced into Micronesia.

15. Phyllophaga bipunctata (Brenske), NEW COMBINATION (figs. 8, 9)

Holotrichia bipunctata Brenske, 1892: 187.

Length 13.8 to 18.1 mm. Width 8.00 to 10.1 mm. Form elongate, parallel, widest posterior to middle of elytra. Color yellowish brown; mouthparts and anterior tibia darker reddish brown. Head with coarse, dense punctures separated by less than their diameter, a longitudinal depression present at middle between eyes; clypeus with anterior margin feebly emarginate, reflexed; labrum bilobed, deeply concave medially, level with anterior edge of clypeus; antenna of ♂ with basal segment as long as segments 2–7, 3-segmented club slightly shorter than basal segment, antenna of ♀ with club about one-half the length of segments 2–7; mentum strongly concave medially. Pronotum 3.7 mm long, 6.8 mm wide, smooth, shining, coarse punctures separated by 1 to 2 times its diameter, lateral margin sinuate, strongly produced medially, explanate and slightly reflexed immediately before acute anterolateral angle, posterolateral angle not pronounced, bluntly rounded, base completely margined, ♀ with a deep, distinct pit on each side of middle along anterior margin. Elytra 11.0 mm long, 8.3 mm wide, smooth, shining, intervals 1, 3 and 5 slightly raised, nearly impunctate, rest of elytron with coarse punctures separated by a diameter or less, elytron with sides parallel in basal one-third, widened and curved in apical two-thirds. Metasternum with a pruinose sheen, sparsely punctured, covered with long, silky pubescence. Abdomen with a pruinose sheen, sterna 2–5 connate medially, each with a single row of setigerous punctures medially, small, confused punctures laterally. Pygidium small, somewhat triangular, with coarse punctures separated by a diameter or less. Anterior tibia tridentate, apical spur small, sharp, below tarsal insertion on inner margin. Middle tibia with apex serrate, fimbriate with stout spines, inner spur slightly longer than outer, both spurs strong, bluntly pointed. Hind tibia with apex serrate, fimbriate with stout, equal spines, inner spur distinctly shorter than outer, outer spur more slender, slightly curved. Claw with tooth behind middle, apex of tooth curved posteriorly. Male genitalia with lateral lobes fused basally, symmetrical, apex of lateral lobe blunt; median lobe with apex flattened, spatulate (figs. 8, 9).

Type: Humboldt University Museum.

Type locality: Philippines.

Specimens examined: 82.

DISTRIBUTION: Mariana Islands: Guam.

This species has thus far been reported in Micronesia only from Guam and has almost certainly been carried to that island from the Philippines. A great deal of wartime air traffic took place between Guam and the Philippines and this is probably how *bipunctata* was introduced. As discussed above

under systematics, the generic name *Phyllophaga* is here considered to have priority over *Holotrichia*.

16. Lepidiota carolinensis Arrow (fig. 10)

Lepidiota carolinensis Arrow, 1939: 86–87.

Length 19.0 to 21.9 mm. Width 9.7 to 13.0 mm. Form elongate, sides feebly rounded. Color yellowish brown; head, pronotum, scutellum and anterior femur brownish red. Head with large, round punctures separated by less than twice its diameter, anterior clypeal margin arcuately rounded, reflexed, anterior face of clypeus flat, indistinctly punctured; labrum strongly concave, appearing bilobed, level with anterior face of clypeus; antenna 10-segmented, ♂ with club 5/6 as long as scape, ♀ with club 1/2 as long as scape; mentum flat. Pronotum 5.7 mm long, 10.47 mm wide, wider than base of elytra, anterior margin broadly, weakly emarginate, posterior margin sinuate with a barely perceptible marginal line, lateral margin crenate, broadly, strongly rounded, posterolateral angle slightly produced, blunt, surface smooth, shining, fine punctures separated by 1 to 3 times its diameter. Elytron smooth, shining, evenly punctured, strial punctures scarcely separable from other punctures, intervals 1, 3, 5 and 7 feebly convex, each puncture with a small, scarcely visible, white scale. Abdomen with sterna 2–5 connate medially, very fine, setigerous punctures present, becoming sparse medially, denser laterally. Pygidium nearly triangular, roughly sculptured with elongate punctures. Anterior tibia tridentate in apical one-half, anterior spur long, slender, parallel sided, pointed. Middle and hind tibia with a row of sharp serrations on outer margin next to body, inner spur shorter than outer, both pointed. Tarsal claw with a small tooth near base, tooth sharp, directed toward base of claw. Genitalia with lateral lobe 3/4 as long as basal piece, apex very feebly emarginate, upper and lower anterior angles equal (fig. 10).

Type: British Museum (Natural History).

Type locality: "Palao" Island.

Specimens examined: 14.

DISTRIBUTION: Caroline Islands: Palau (Babelthuap, Peleliu). Mariana Islands: Guam.

This is a species apparently native to Micronesia, the Palau Islands in particular, and is frequently attracted to light. The key characters are sufficient to separate *carolinensis* from other Micronesian *Lepidiota*.

17. Lepidiota dybasi Gordon, new species (figs. 11, 24).

HOLOTYPE MALE. Length 22.9 mm. Width 10.7 mm. Form elongate, widest posterior to middle of elytra. Color brown; head, pronotum, propleuron, mouthparts and anterior tibia reddish brown; middle and hind legs and elytron yellowish brown. Head with coarse, slightly elongate punctures contiguous or separated by 1 to 2 times a diameter, anterior clypeal margin weakly but distinctly emarginate medially, reflexed, anterior face of clypeus angled posteriorly with a few coarse punctures present; labrum strongly concave, appearing bilobed, level with anterior face of clypeus; antenna 10-segmented, club as long as scape, with 4th segment much larger than 3rd, produced on inner margin, segments 5–7 produced on inner margin, segment 7 flattened, leaf-like (fig. 24). Pronotum 5.00 mm long, 9.6 mm wide, wider than base of elytra, anterior margin broadly, weakly emarginate, posterior margin strongly sinuate with marginal line nearly obsolete, lateral margin strongly crenate, rounded, posterolateral angle distinct, bluntly angulate, anterolateral angle bluntly angulate, surface smooth, shining, punctures equal in size to punctures on elytron, separated by 1 to 3 times a

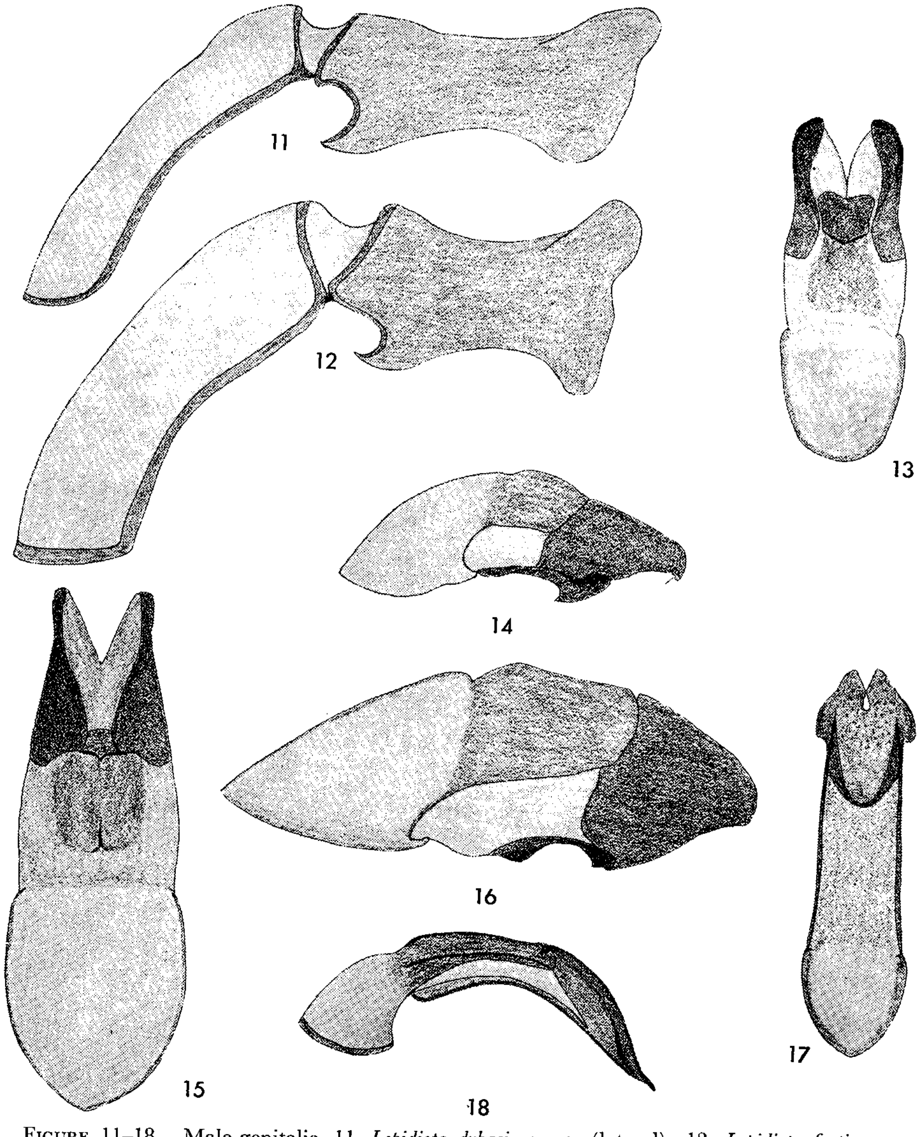


FIGURE 11–18. Male genitalia. 11, *Lepidiota dybasi*, n. sp. (lateral); 12, *Lepidiota furtiva*, n. sp. (lateral); 13, 14, *Anomala orientalis* (Waterhouse) (ventral and lateral); 15, 16, *Anomala sulcatula* Burmeister (ventral and lateral); 17, 18, *Adoretus sinicus* Burmesiter (ventral and lateral).

diameter. Elytron 18.1 mm long, 10.7 mm wide, smooth, shining, evenly punctured, strial punctures not separable from others, interval 7 feebly convex, each puncture with a small, scarcely visible, white scale. Metasternum densely pubescent, punctured, midline complete. Epipleuron with a single row of intermixed long and short setae forming a fringe visible in dorsal view, long setae about 1.0 mm in length basally, decreasing in length toward apex.

Abdomen with sterna 2–5 connate medially, scattered, setigerous punctures present, slightly denser laterally. Pygidium feebly triangular, punctures coarse, distinct in basal 2/3, apical 1/3 becoming scabrous, wrinkled. Anterior tibia tridentate, lower tooth at middle of tibia, anterior spur slightly shorter than 1st tarsal segment, slender, tapered to a sharp point. Hind tibia with a row of sharp serrations on outer margin next to body, inner spur shorter than outer, as long as first tarsal segment, bluntly pointed, outer spur acute, longer than 1st tarsal segment. Middle tibia with both spurs shorter than 1st tarsal segment, subequal in length. Claw with a small, sharp, posteriorly directed tooth near base. Genitalia with lateral lobe only slightly shorter than basal piece, apex feebly emarginate, upper angle rounded, strongly produced (fig. 11).

Variation: Length 21.0 to 23.1 mm. Width 10.8 to 13.0 mm. The elytral color ranges from a light yellowish brown to reddish brown, nearly as dark as pronotum. The degree of modification of antennal segments 4–7 varies slightly in nearly every specimen examined.

Type: U. S. National Museum of Natural History, No. 71378.

Type locality: Collected on Peleliu I., Palau Islands, VIII–12–45, by E. Hagen.

Paratypes: Total 12, all ♂♂. Palau Islands: same data as holotype; Peleliu I., West Coast, Feb. 2, 1948, H. S. Dybas; Peleiu I., East Coast, Feb. 1, 1948, Dybas; Peleliu, Amiangal Mt., Dec. 22, 19–52, light trap, J. L. Gressitt.

Remarks: In addition to the key characters, *L. dybasi* may be distinguished by the modified antennal segments, larger overall size and the male genitalia with the lateral lobe nearly as long as the basal piece. This species, *L. carolinensis* Arrow and *L. furtiva*, n. sp., form a closely knit group within *Lepidiota*, superficially they are difficult to separate from each other and are all probably endemic to the islands. The measurement of body length in this and all other species of Melolonthinae herein described are taken from the anterior margin of the pronotum to the apex of the elytron.

18. Lepidiota furtiva Gordon, new species (fig. 12)

Holotype male. Length 18.0 mm. Width 9.1 mm. Description as for *L. dybasi* except differences as noted below. Antennal scape with 4th segment very little larger than 3rd, segments 5–7 very little modified, segment 7 feebly flattened. Pronotum 4.7 mm long, 8.2 mm wide. Elytron 13.3 mm long, 9.1 mm wide; epipleuron with a single row of short equal setae forming a fringe visible in dorsal view, length of setae gradually decreasing from base to apex. Anterior tibia with apical spur one-half length of 1st tarsal segment, stout, tapered to a blunt point. Genitalia with lateral lobe slightly less than 3/4 as long as basal piece, apex emarginate, upper angle more strongly produced than lower angle (fig. 12).

Variation: Length 17.5 to 20.5 mm. Width 9.0 to 12.0 mm. Elytral color ranges from a light yellowish brown to a mahogany brown and pronotum may be dark brown instead of a clear reddish brown.

Type: U. S. National Museum of Natural History, No. 71379.

Type locality: Collected on Ngurukdapel (Auluptagel), NW., Palau, alt. 25 m., Dec. 12, 1952, light trap, by J. L. Gressitt.

Allotype female. Length 19.0 mm. Width 10.00 mm. Similar to ♂ except antennal club

less than one-half as long as scape; hind tibia with both spurs spatulate, inner spur more strongly so, apex bluntly pointed. Same collection data as holotype.

Paratypes: Total 21, 9 females. Palau Islands: same data as holotype; Peleliu, Amiangal Mt., Dec. 22, 1952, J. L. Gressitt; Koror, 19 Nov. 1947, H. S. Dybas; Peleliu, North Central Islet, July 10, 1945, Dybas.

This is another apparently endemic species closely related to *carolinensis* and *dybasi*. See remarks under *dybasi*.

Subfamily RUTELINAE

The subfamily Rutelinae is represented in Micronesia by 3 genera and 5 species, the 3 genera representing rather divergent elements within the subfamily. Many members of this group are attracted to light, often in large numbers. This habit may account for the presence of 2 or 3 of the species now found in Micronesia. The presence of bright lights at airports tends to bring the beetles into the vicinity and then a few specimens can quite easily be loaded onto planes along with the cargo. The larvae of many rutelines are root feeders and in some cases cause damage to economically important plants. The adults are often collected at flowers.

Key to Micronesian Species of Rutelinae

1. Anterior margin of clypeus with 2 sharp, dorsally projecting denticles..................... ....**Parastasia guttulata** Fairmaire
   Anterior margin of clypeus completely lacking denticles...2
2. Lateral margin of elytron with a thin, membranous border, especially noticeable near apex 3
   Lateral margin of elytron with no trace of a membranous border.................................4
3. Size small, less than 10.0 mm long; clypeal margin vertical, reflexed................. ....**Anomala orientalis** (Waterhouse)
   Size large, more than 10.0 mm long; clypeal margin broadly angled posteriorly, feebly reflexed...**Anomala sulcatula** Bermeister
4. Dorsal surface with short, dense, white scales.....................**Adoretus sinicus** Burmeister
   Dorsal surface with sparse, slender setae...........................**Adoretus kororensis,** n. sp.

19. Anomala orientalis (Waterhouse) (figs. 13, 14)

Phyllopertha orientalis Waterhouse, 1875: 108.

Phyllopertha (*Exomala*) *orientalis:* Reitter, 1903: 89; Ohaus, 1918: 119.

Anomala orientalis: Arrow, 1913: 396.

Length 7.6 to 9.0 mm. Width 4.7 to 7.0 mm. Elongate, widest posterior to middle of elytra. Clypeus with anterior margin narrowly reflexed, vertical, lateral angles rounded, clypeofrontal suture fine, complete; entire head with coarse punctures separated by their diameter or less, surface between punctures shining, a few fine punctures present; color usually yellow with a dark greenish brown band from anterior margin of eye to posterior margin of head, the entire head may be a light yellowish brown to dark brassy brown. Pronotum 2.6 mm long, 4.6 mm wide, anterior angle produced, blunt, lateral margin evenly

rounded from base to apex, posterolateral angle obtusely rounded, surface smooth, punctured, punctures transversely elongate, separated by their diameter or less; color usually yellow with a broad greenish brown vitta on each side of middle, disc may be entirely pale yellowish brown or entire surface may be dark reddish brown. Elytron 6.3 mm long, 5.3 mm wide, flattened, humeral callus prominent with lateral margin of elytron strongly descending near callus, striae impressed, fine strial punctures usually not contiguous, intervals finely alutaceous with fine, widely scattered punctures present; color yellow with irregular, obliquely transverse, dark brown markings, elytron may be entirely pale yellowish brown or completely dark reddish brown. Metasternum pubescent, pubescence originating from coarse, elongate punctures, midline smooth, pubescence nearly absent. Abdominal sterna with fine, transverse, setigerous punctures, surface alutaceous. Pygidium alutaceous, broad, shallow punctures present, apical margin fringed with long hairs. Anterior tibia widened from base to apical one-third, abruptly and bluntly toothed on outer margin, narrowed toward apex, outer apical angle prolonged into a large, rounded tooth, inner apical angle with a short, stout spine before apex. Tarsus with segments enlarged apically, last segment longer than preceding 2 segments combined, enlarged, a broad, blunt tooth on lower margin just before midpoint. Anterior tarsal claw of ♂ thickened medially, split, posterior claw unmodified; ♀ anterior claw not thickened, split; mesotarsal anterior claw split; metatarsal claws unmodified. Male genitalia with lateral lobes overlapping dorsally nearly to apex, abruptly hooked downward at apex in lateral view, median lobe with apex hooked downward in lateral view, apex emarginate in ventral view (figs. 13, 14); internal sac with 3 large, pointed spines anteriorly, most of internal wall of sac lined with small, sharp spinules.

Type: British Museum (Natural History).

Type locality: Japan: Kawachi.

Specimens examined: 10.

DISTRIBUTION: Bonin Islands: Chichi Jima: Iwo Jima.

This species was originally native to Japan but has been carried by commerce and become established in many areas of the Pacific as well as the eastern United States. Arrow (1913) stated that he considered *Phyllopertha* and a few other related genera to be indistinguishable from the genus *Anomala*. In the Coleopterorum Catalogus (1918) Ohaus retained *Phyllopertha* as a valid genus. After comparison of *orientalis* with many members of both *Anomala* and *Phyllopertha* we prefer to follow Arrow in considering *orientalis* as belonging to *Anomala*. A worldwide study is necessary to determine generic limits with the Anomalini, but the preliminary evidence indicates that there have been too many generic names proposed based on trivial characters.

20. Anomala sulcatula Burmeister (figs. 15, 16)

Anomala sulcatula Burmeister, 1844: 261.

Length 11.0 to 15.0 mm. Width 7.10 to 8.75 mm. Elongate, widest at middle of elytra. Color varying from uniformly light to dark brown dorsally and ventrally with head and pronotum always with a definite metallic greenish brown sheen. Clypeus with anterior margin feebly reflexed, strongly flattened and obliquely slanted posteriorly, lateral angles rounded, clypeofrontal suture fine, complete; entire head coarsely, densely punctured,

punctures contiguous or nearly so, surface shining, a few punctures near eye setigerous. Pronotum 3.6 mm long, 4.7 mm wide, strongly narrowed anteriorly, anterior angle curved downward, obtusely rounded, posterolateral angle obtusely rounded, lateral margin slightly produced medially; surface with coarse punctures separated by 1 to 2 times their diameter, area between punctures shining with fine scattered punctures present. Elytron 9.5 mm long, 8.00 mm wide, flattened, humeral callus not prominent, lateral margin of elytron not concealed by callus in dorsal view, striae strongly impressed, strial punctures distinct, not contiguous, punctures on intervals dense, as coarse as strial punctures. Metasternum pubescent, pubescence originating from coarse, elongate punctures, middle smooth, pubescence nearly absent. Abdominal sterna with fine, transverse, setigerous punctures, surface finely alutaceous. Pygidium finely, transversely scabrous, apical margin fringed with long hairs. Anterior tibia slightly widened from base to apical one-third, abruptly and bluntly toothed on outer margin, narrowed toward apex, outer apical angle prolonged into a bluntly pointed tooth, inner apical angle with a short, stout spur before apex. Tarsus with segments enlarged apically, last segment as long as preceding 3 segments, enlarged, a broad, blunt tooth on lower margin just before midpoint. Anterior tarsal claw of ♂ thickened medially, split at apex, posterior claw unmodified; ♀ anterior claw not thickened medially, split at apex. Mesotarsal anterior claw split. Metatarsal claws unmodified. Male genitalia with lateral lobes overlapping dorsally nearly to apex, apex rounded, slightly sinuate on lower margin; basal lobe reduced, concealed within lateral lobes (figs. 15, 16); internal sac lined with several long, sharp spines.

Type: Present location unknown.

Type locality: Philippines: Luzon.

Specimens examined: 262.

DISTRIBUTION: Mariana Islands: Saipan, Tinian, Rota, Guam.

This species is apparently very common on Guam and Saipan in the Marianas. It was probably carried there by military planes from the Philippines and became established. The only other recorded localities for *sulcatula* are the Philippines and Sandakan, North Borneo.

21. Adoretus sinicus Burmeister (figs. 17, 18)

Adoretus sinicus Burmeister, 1855: 532–533.

Adoretus (*Lepadoretus*) *sinicus:* Reitter, 1903: 30.

Length 7.9 to 9.7 mm. Width 4.0 to 5.5 mm. Form elongate, narrow, nearly parallel-sided. Color light brown to dark brown dorsally and ventrally with legs and mouthparts slightly paler. Clypeus with anterior margin semicircular, reflexed, scales very dense on reflexed margin, surface with transversely connected inverted punctures giving appearance of flattened tubercles with an appressed scale emerging from the posterior edge, surface finely alutaceous. Pronotum 1.6 mm long, 4.4 mm wide, anterolateral angle produced, bluntly angulate, lateral margin evenly curved, posterolateral angle rounded, surface densely covered with scales emerging from coarse punctures separated by less than their diameter, surface finely alutaceous. Elytron 7.0 mm long, 5.0 mm wide, descending near lateral margin, humerus not prominent, striae not impressed, indistinct, fine, raised longitudinal rows present, surface densely punctured, each puncture with a single scale. Metasternum with scales, scale-bearing punctures coarse, dense, midline smooth, scales nearly absent. Abdominal sterna with transverse, scale-bearing punctures, surface alutaceous. Pygidium with dense, scale-bearing punctures, surface between punctures strongly alutaceous, apical portion with long white setae. Anterior tibia with 3 large teeth on outer margin apically,

inner margin with a short, stout spur before apex. Tarsus slender with last segment expanded and longer than rest of segments combined. Anterior protarsal and mesotarsal claws split apically, much longer than posterior claws. Metatarsal anterior claw not split at apex. Male genitalia flattened dorsoventrally, lateral lobes fused ventrally, apex triangularly emarginate, narrowed to an elongate-oval emargination (figs. 17, 18); internal sac with a single large curved spine, lined with tiny spicules.

Type: Present location unknown.

Type locality: China: Hong Kong.

Specimens examined: 72.

DISTRIBUTION: Mariana Islands: Rota, Guam. Caroline Islands: Palau (Babelthuap, Koror, Peleliu).

This is another species widely distributed by commerce and well established in the Marianas and Palaus. It was originally native to China and Formosa and has spread to many localities in the Pacific.

22. Adoretus kororensis Gordon, new species (figs. 19–21)

HOLOTYPE MALE. Length 10.00 mm. Width 5.28 mm. Form elongate, parallel. Color yellowish brown; head black, clypeus brown; ventral surface yellowish brown, legs slightly paler; pronotum yellowish brown, slightly paler at lateral margin; elytron yellowish brown. Head with anterior margin of clypeus evenly, arcuately rounded, reflexed; surface finely alutaceous; transverse, setigerous punctures arranged in irregular, transverse rows; reflexed margin of clypeus with a dense border of flattened, scale-like setae, anterior surface of clypeus nearly flat, setigerous; labrum with large, setigerous tubercles, apex of intermandibular process feebly rounded, lateral margin of process tuberculate; mandible dorsoventrally flattened, apex blunt, triangular, slightly bent downward; antenna 10-segmented, club equal in length to scape. Pronotum transverse, 2.10 mm long, 4.36 mm wide, posterolateral angle broadly rounded, anterolateral angle abrupt, acute, lateral margin crenulate, base distinctly margined; surface finely alutaceous, coarse, round, setigerous punctures separated by less than 3 times a diameter, slightly denser on each side of middle. Elytron 7.9 mm long, 5.3 mm wide, setigerous punctures present in parallel rows throughout; intervals 3, 5 and 7 convex, feebly costate, 2, 4, 6 and 8 flat, 2nd interval with 2 very irregular rows of punctures, intervals 4, 6 and 8 each with a single row of punctures. Metasternum with an elongate, nearly impunctate, finely alutaceous median area, median area slightly depressed with a distinct median suture extending to apex of intercoxal process, a feebly impressed, punctate line extending outward on each side of median suture forming a "wishbone", lateral one-third with broad, shallow, contiguous setae-bearing punctures. The 6 visible abdominal sterna with dense setigerous punctures, median area slightly less densely punctured. Anterior tibia with 3 lateral teeth, inner margin near apex smooth, evenly curved, a single short, bluntly pointed spur at tarsal emargination. Middle and hind tibiae each with 2 short, oblique rows of irregular serrations along lateral margin, apex of tibiae with 2 spurs, outer spur short, slightly curved, apex bluntly rounded, inner spur 1/3 longer than outer, slightly sinuate, apex bluntly rounded. Tarsal claws curved, sharp, entire, outer claw nearly twice the length of inner. Genitalia strongly curved, lateral lobes fused, apical emargination evenly triangular, apical orifice nearly round; internal sac with a heavy curved, basal tooth and a small apical spine rising from a flattened, circular, lightly sclerotized area (figs. 19, 20, 21).

Type: U. S. National Museum of Natural History, No. 71380.

Type locality: Koror I., Palau Islands, Nov. 24, 1947, H. S. Dybas.

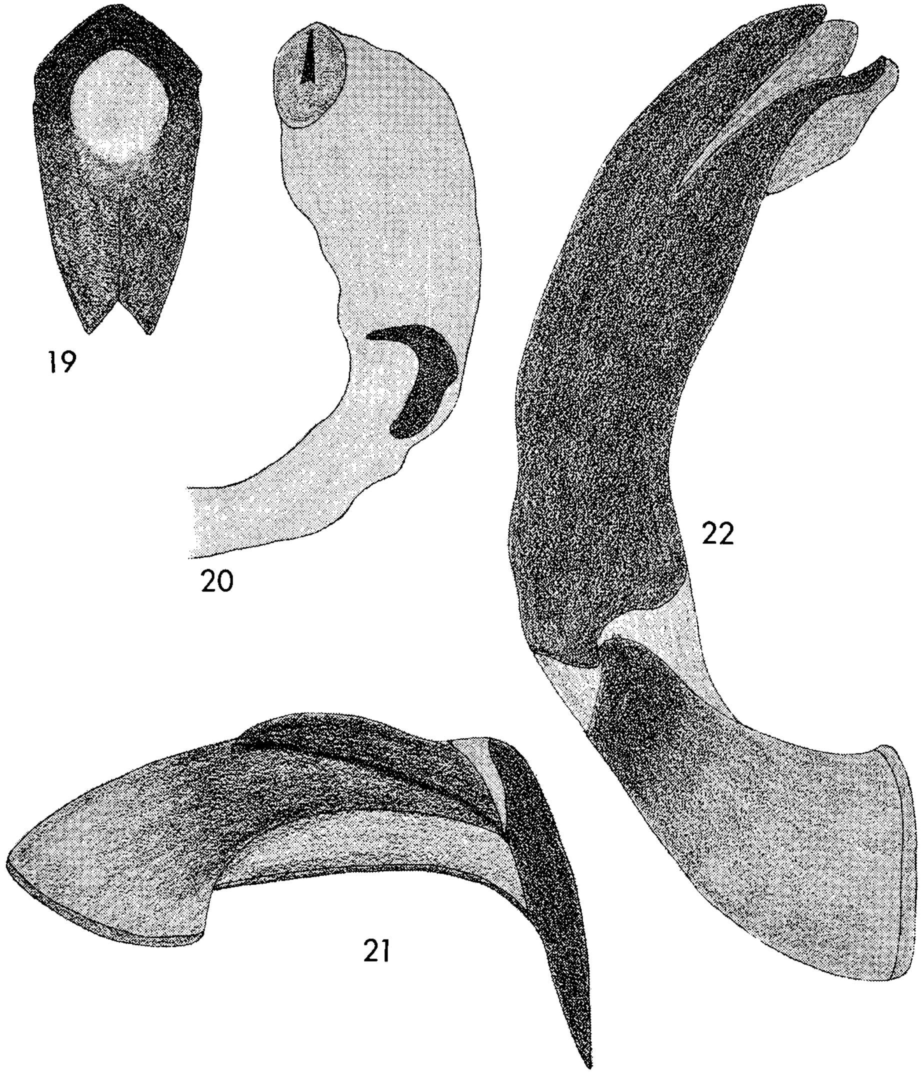


FIGURE. 19–22. Male genitalia. 19–21, *Adoretus kororensis*, n. sp. (apical view, internal sac, lateral); 22, *Protaetia fusca* (Herbst) (lateral).

ALLOTYPE FEMALE. Length 9.91 mm. Width 6.00 mm. Similar to ♂ except color brown to piceous and antennal club 3/4 the length of the scape. Koror, Palau Islands, Mar. 1953, J. W. Beardsley.

Paratypes: Total 2, ♀♀. Same data as allotype.

This species is apparently closest to *A. sandakanus* Ohaus from Borneo in the form of the ♂ genitalia, but the triangularly emarginate apex of the fused lateral lobes in *kororensis* is distinctive.

23. Parastasia guttulata Fairmaire

Parastasia guttulata Fairmaire, 1883: 9.

Length 11.2 to 14.0 mm. Width 7.6 to 9.0 mm.

MALE. Oblong, convex, widest posterior to middle of elytra. Color yellow; basal lateral spot on pronotum, head, ventral surface except legs and last 2 abdominal sterna and lateral spot on pygidium reddish brown. Apical margin of clypeus with a sharp, abruptly upturned tooth on each side of middle, lateral angle rounded; clypeo-frontal suture broadly interrupted medially, head with sparse, shallow punctures, punctures near margin of eye setigerous, surface finely alutaceous. Pronotum 5.0 mm long, 7.5 mm wide, convex, narrowest across anterior margin, lateral margin projecting medially, anterior angle obtuse, less than a right angle, posterolateral angle obtuse, a right angle, all borders margined except base, punctures fine, separated by 1 to 6 times their diameter, surface finely alutaceous, a small fovea present medially near lateral margin. Elytron 8.8 mm long, 8.5 mm wide, striae not impressed, punctures fine, rarely contiguous, intervals shining, not alutaceous, finely punctured. Metasternum strongly reticulate, punctured, each puncture with a long hair, midline impunctate, nonpubescent. Abdominal sterna with fine, transverse reticulation, punctures fine, scattered, bearing short setae. Pygidium with fine, transverse reticulation present except on median, apical one-third which is smooth, shining with few fine punctures. Protibia with anterior face coarsely, setigerously punctured, 3 large teeth present on outer margin near apex, a long, pointed spur on inner margin before apex. Mesotibia with outer margin strongly emarginate in apical one-half, a sharp terminal tooth on outer apical angle, a short, stout spur and a long, slender spur present on inner apical angle. Metatibia with outer apical angle produced, bluntly pointed inner apical angle with spurs on mesotibia, apical margin sinuate. Tarsus with last segment thickened, as long as preceding 2 segments combined. Claws equal, simple. Genitalia with basal piece broad, widened posteriorly; lateral lobes fused dorsally nearly to apex, joined ventrally, abruptly separated medially, internal sac with no large teeth but with a patch of small, heavily sclerotized teeth.

FEMALE. Similar to ♂ except in color pattern and shape of pronotum. Pronotum with both anterior and posterior angles more broadly rounded, discal area much more strongly convex. Color of pronotum dark reddish brown, a narrow, median, longitudinal vitta and lateral one-fourth yellow; scutellum and elytron dark reddish brown with humeral callus yellow and small yellow spots scattered indiscriminately throughout, pygidium entirely dark reddish brown.

Type: Museum National d'Histoire Naturelle, Paris.

Type locality: Duke of York I.

Specimens examined: 37.

DISTRIBUTION: W. Caroline Islands: Palau (Babelthuap, Koror, Ngergoi (Garakayo), Peleliu, Angaur); Yap.

In addition to the Micronesian localities listed above, *guttulata* has been recorded from the following localities: Bismarck Archipelago; New Britain; Duke of York group, Shortland Islands; Solomon Archipelago; Pulakora. The genus *Parastasia* has many species, most of them from the Philippines, Borneo, New Guinea and Southeast Asia with a single species found in the eastern United States.

Subfamily DYNASTINAE

The members of the subfamily Dynastinae are mostly large, robust beetles with at least the ♂♂ usually possessing some type of armature on the head. The subfamily is found worldwide and has developed particularly well in the tropical regions. The larvae usually develop in rotting vegetation such as old logs or stumps, etc. Several species of the Dynastinae have become economically important on such crops as sugar cane or, as in the case of one of the 3 species found in Micronesia, coconut palms.

Key to Micronesian Species of Dynastinae

1. Size large, usually more than 25.0 mm in length...2
   Size small, less than 25.0 mm in length; anterior clypeal margin nearly truncate with a small tooth on anterolateral angle.....................**Papuana hubneri** (Fairmaire)
2. Anterior clypeal margin deeply emarginate medially, appearing bilobed.. **Oryctes rhinoceros** (L.)
   Anterior clypeal margin narrow, truncate...........................**Anoronotum rufum** Arrow

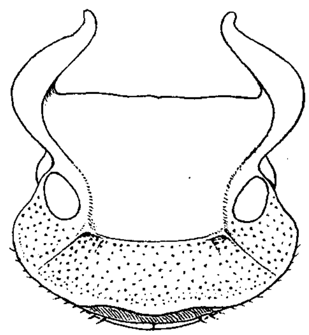
24. **Oryctes rhinoceros** (L.)

Scarabaeus rhinoceros Linnaeus, 1758: 346.

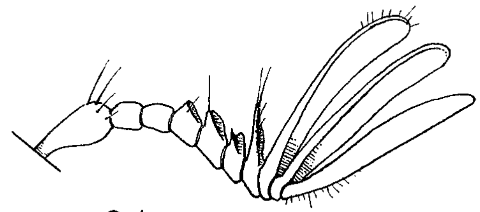
Oryctes rhinoceros: Burmeister, 1847: 202–203.

Female. Length 39.0 mm. Width 20.0 mm. Form elongate, widest posterior to middle of elytra. Color dark reddish brown, ventral surface slightly paler than dorsal surface. Head with short, robust, triangular horn angled posteriorly, anterior and lateral surfaces of horn densely punctured; clypeus with anterior margin deeply emarginate, anterolateral angle produced, reflexed; dense, reddish brown setae on ventral surface of clypeus visible in dorsal view; mandible flat, straight, visible in dorsal view; antenna with basal segment large, setigerous, club short, compact. Pronotum 13.1 mm long, 18.2 mm wide, a transversely oval depression on middle in apical half, posterior margin of depression with 2 feeble, blunt tubercles, depression, anterolateral angle and narrow area posterolateral to depression strongly, transversely eroded, anterolateral angle acute, produced, posterolateral angle bluntly rounded, base strongly margined; propleuron with dense, reddish brown setae visible in dorsal view. Elytron 24.8 mm long, 20.0 mm wide, smooth, shining, intervals 3, 5 and 7 feebly costate with a single row of very fine punctures on each interval, intervals 2, 4, 6 and 8 with large, round distinctly impressed punctures separated by their diameter or less, a few fine punctures interspersed among large punctures. Pygidium convex, densely punctured and covered with long, erect reddish brown setae. Anterior tibia with 3 large teeth on outer margin in apical one-half, a short, rounded projection present between 2nd and 3rd tooth and behind 3rd tooth, anterior spur robust, slightly curved inward, bluntly pointed. Apex of middle and hind tibiae each with 2 large teeth, outer apical spur short, blunt, inner spur twice as long as outer, bluntly pointed. Tarsus with ultimate segment nearly as long as previous 2 segments, swollen, claws equal in length, unmodified, strongly curved. Genitalia with basal piece twice as long as lateral lobe, apex of lateral lobe bluntly rounded, orifice between lateral lobes elongate, oval.

Male. Similar to ♀ except cephalic horn usually longer and stouter; pygidium smooth, glabrous.



23



24

FIGURE 23–24. Fig. 23, *Onthophagus armatus* Blanchard (male head); 24, *Lepidiota dybasi*, n. sp. (male antenna).

Type: Present location unknown.

Type locality: "Asia".

Specimens examined: 10.

DISTRIBUTION: Palau Islands, S. Asia, etc.

Gressitt (1951) has done an exhaustive study on this, the coconut rhinoceros beetle, dealing with ecology, biology, etc. He states that this is another introduced species established only in the Palau Islands of Micronesia and probably carried there by Japanese shipping during 1942. *O. rhinoceros* is a pest of the coconut palm and other palms and the larvae especially may be easily transported as they develop in dead wood or rotting vegetable material of many kinds.

25. Papuana hubneri (Fairmaire)

Pimelopus hubneri Fairmaire, 1879: 46.

Papuana hubneri: Arrow, 1911: 157.

MALE. Length 21.0 mm. Width 11.0 mm. Elongate, parallel, sides of elytra feebly rounded. Color dark brown; dorsal surface blackish brown; mouthparts, antenna and anterior coxa yellowish brown. Head with a short, blunt horn at middle of clypeal suture, slightly curved posteriorly, anterior margin of clypeus nearly truncate, lateral angle with a small, blunt tooth, surface of head and clypeus with fine, irregular lines, impunctate, shining. Pronotum 7.00 mm long, 10.4 mm wide, convex, with a short, bluntly rounded, median projection, area anterior to projection slightly concave, anterior margin broadly, distinctly emarginate, base lacking marginal line, feebly sinuate on each side of middle, lateral margin curved, strongly so near posterolateral angle, posterolateral angle obtuse, nearly obsolete, anterolateral angle projecting forward, bluntly pointed, basal one-third and basolateral one-fifth with fine, irregular lines, impunctate, shining, an obliquely elongate area extending from anterolateral angle toward protuberance with eroded appearance, deep, irregular longitudinal grooves present, concave area anterior to protuberance shining, with

short, scattered, c-shaped lines. Elytra 12.0 mm long, 11.0 mm wide. Striae distinct, punctured, intervals impunctate, convex, narrow apical area with confused, coarse punctures, surface with a network of fine, irregular lines. Metasternum feebly depressed medially, midline complete from anterior projection to posterior intercoxal process, surface smooth, shining, nearly impunctate, antero-lateral angle with a few coarse punctures. Abdomen with median area of 1st 4 sterna smooth, nearly impunctate, a single row of coarse, setigerous punctures on lateral one-third, 5th sternum with coarse punctures almost continuous across middle, 6th sternum densely, irregularly punctured. Pygidium convex, coarsely punctured, punctures transverse, deeply impressed, contiguous at base and lateral angles becoming scattered on disc. Anterior tibia with 3 large teeth on outer margin in apical one-half, anterior spur strong, blunt, below tarsal insertion. Middle and hind tibiae each with 2 obliquely transverse, serrate carinae, 2 spurs at apex, inner spur twice as long as outer spur, nearly straight, bluntly pointed, inner spur broad, bluntly pointed. Anterior tarsus with penultimate segment triangular, strongly, bluntly produced anteriorly on inner margin, claw segment enlarged, thickened, outer claw thickened, abruptly bent at base, inner claw more slender than outer, not as abruptly bent at base and about 3/4 as long. Middle and hind tarsi with both claws simple, inner claw slightly shorter than outer claw.

FEMALE. Length 24.5 mm. Width 13.5 mm. Similar to ♂ except head with 2 small tubercles at middle of clypeal sutue. Pronotum with median protuberance lacking, a feeble apical protuberance present, lateral eroded area lacking, entire surface finely, indistinctly punctured. Pygidium with punctures round, coarse, contiguous laterally and basally, separated by 1 to 3 times a diameter on disc. Anterior tarsus with claw segment only feebly thickened, penultimate segment small, lacking anterior projection, claws simple, subequal. All tibial spurs sharply pointed.

Type: Museum National d'Histoire Naturelle, Paris.

Type locality: Duke of York Island.

Specimens examined: 2.

DISTRIBUTION: Gilbert Islands: Tarawa.

This species has been previously recorded from Duke of York Island and New Britain and is apparently not native to Micronesia. *P. hubneri* is not likely to be confused with any other dynastine genus presently known from Micronesia because of the distinctive clypeal margin.

26. **Anoronotum rufum** Arrow

Anoronotum rufum Arrow, 1939: 86.

The following description is repeated from Arrow (1939).

"Deep red, with the pronotum, sternum, femora and hind coxae yellowish-red; very smooth and shining above, the legs and lower surface clothed with long, not very abundant, hair; narrow, parallel-sided, not very convex. Eyes large, clypeus finely rugose, produced in front and behind, with a small tubercle at the posterior end. Pronotum very lightly punctured in front, very smooth behind, the front angle acute, the lateral margin nearly straight in front gently curved behind, the hind angle very obtuse. Elytra long, very smooth, almost unpunctured, except near the hind margin, but with light traces of double longitudinal lines. Pygidium convex, very smooth, unpunctured."

Type: Bishop Museum, Honolulu.

Type locality: Palao I.: Ngardok, Melokeiok (Babelthuap).

No specimens of this monotypic genus have been examined but the



25

FIGURE 25 *Termitodiellus esakii* (Nomura).

description leaves no doubt as to *A. rufum* being quite distinct from either *O. rhinoceros* or *P. hubneri*. Arrow states that *Anoronotum* is one of several isolated genera of Dynastinae found on the Pacific Islands. As far as is known, this genus and species has been reported only from the type locality.

SUBFAMILY CETONIINAE

This subfamily is represented in Micronesia by a single introduced genus and species. The subfamily as a whole is primarily tropical in distribution and is particularly numerous in terms of numbers of species in tropical Asia. The adults are usually brightly colored, relatively large beetles, capable of strong flight and many are attracted to light.

27. Protaetia fusca (Herbst) (fig. 22)

Cetonia fusca Herbst, 1790: 257.

Protaetia fusca: Arrow, 1910: 138.

Length 14.9 to 16.4 mm. Width 8.41 to 9.00 mm. Form slightly triangular, widest at humeral angle. Color coppery black; pronotum and elytra dull brownish green. Head with elongate, coarse, setaebearing punctures, setae flattened, scale-like, punctures separated by their diameter or less, not as dense on clypeus, anterior clypeal margin nearly truncate, very weakly emarginate medially, frons with a rounded, longitudinal carina medially. Pronotum 4.33 mm long, 7.29 mm wide, narrower than base of elytra, strongly narrowed anteriorly, anterior margin strongly convex, feebly emarginate, posterior margin emarginate

in front of scutellum, lateral margin angled inward toward apex, postero-lateral angle broadly rounded, antero-lateral angle obtuse, distinct, surface dull, velvety, midline narrowly impunctate, scale-like setae arising from transversely elongate punctures separated by 2 to 3 times a diameter near midline, becoming dense, separated by a diameter or less toward lateral margin, scattered, yellowish white, tomentose areas present, becoming more frequent toward lateral margin. Elytron with surface dull, velvety, scattered c-shaped, setigerous punctures scattered throughout except along suture and scutellum, 5 narrow, elongate grooves near suture at basal one-half, parallel to suture, yellowish white, small tomentose areas scattered throughout, 2 large tomentose areas along lateral margin anterior to and posterior to middle, lateral margin of elytron strongly emarginate behind callus, sutural margin becoming carinate in apical one-third, ♀ with sutural margin feebly projecting, rounded at apex, ♂ with sutural margin strongly projecting, acutely pointed at apex. Mesosternum with intercoxal process large, anterior margin weakly rounded, emarginate medially on lateral margin. Metasternum with broad, median area impunctate, lacking setae, lateral one-third with dense, elongate, setigerous punctures and scattered tomentose areas. Abdomen with sterna 2–6 with irregular, transverse rows of c-shaped punctures bearing scale-like setae, each with a large tomentose patch on each side of middle. Pygidium rough, densely punctured, scale-like setae present, irregular tomentose areas on each side of middle. Anterior tibia tridentate, posterior tooth at midpoint on outer margin, feeble, anterior spur long, slender, pointed, arising at apex inside tarsal insertion. Middle and hind femora with a strong, transverse suture near posterior margin, a dense row of scale-like setae rising from suture. Middle and hind tibia with apex tridentate, 2 apical spurs present, slender, bluntly pointed, inner spur slightly longer than outer. Claws curved, simple, lacking teeth. Genitalia with lateral lobes fused dorsally in apical one-half, right lobe cleft laterally in apical one-half, upper portion with apex curved inward, rounded, lower portion sinuate before apex in lateral view (fig. 22).

Type: Humboldt University Museum, East Berlin.

Type locality: Not known.

Specimens examined: 10.

DISTRIBUTION: Mariana Islands: Guam.

P. fusca has been reported from many areas in the Orient including China, Burma, India, Polynesia, as well as Australia. It is an introduced species in Micronesia but from where it is not possible to say. Sakimura (1950) states that the larvae are scavengers in leaf mold. The adults are attracted to light, and as pointed out in the case of some of the Micronesian Rutelinae, this habit is probably the primary reason for their wide dispersal by commerce.

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